

AMENDMENT A1 - ALUMINUM POLE DETAILS AND SPECS

1 of 25



APPLICATION/PERMIT TO CONSTRUCT, OPERATE AND MAINTAIN UTILITY FACILITIES ON HIGHWAY RIGHT-OF-WAY

Wisconsin Department of Transportation
DT1553 8/2022 s. 66.0831, 84.01(31), 84.08, 85.15, 86.07(2)(a), 86.16, 182.017 and other applicable Wis. Stats.

1. Applicant (Utility facility owner) Name and Address		2. Work Start Date	3. Work Finish Date*	6. Public Land Survey System Location (¼ section, section, town, range; provide plat map)	
		4. Is the work due to a WisDOT highway project? ☐ Yes ☐ No		7. Municipal/County Location (List all that apply) County: _____	
		5. Applicant Work Order or Project ID # (If any)			
9. Facility Type (Check all that apply) and Description (Size, material, voltage, pressure, # fibers, etc.)		12. Proposed Work Methods (Check all that apply)		8. Highway (List all that apply) WIS: _____ US: _____ Interstate: _____	
☐ Comm: _____ ☐ Electric: _____ ☐ Gas/Oil: _____ ☐ Water: _____ ☐ Sewer: _____ ☐ Casing: _____ ☐ Conduit: _____ ☐ _____: _____ ☐ Transmission ☐ Service ☐ Distribution ☐ Service (ESCP)		☐ Trench ☐ Plow ☐ Place fill ☐ Rock blasting ☐ Place cable ☐ Open cut in conduit pavement ☐ Hand/mechanical excavation Bore: ☐ Hydraulic (Auger/Jack/Tunnel) ☐ Pneumatic (Mole) ☐ Directional 1 (Manually tracked) ☐ Directional 2 (Computer tracked) ☐ Unknown (At this time)		13. Work Zone Description (Check all that apply). (Provide relevant diagram(s) with application.) ☐ Not applicable ☐ Full road closure: detour ☐ Full road closure: temporary ☐ Lane closure without flagging ☐ Lane closure with flagging ☐ Lane encroachment (2 feet or less) ☐ Shoulder/parking lane closure ☐ Turn lane closure ☐ Sidewalk or trail closure ☐ Terrace (Area from curb to sidewalk) ☐ Off shoulder/parking lane ☐ Near right-of-way line or fence ☐ Freeway/expressway ☐ Intersection/roundabout ☐ Railroad crossing ☐ Mobile operation	
10. Facility Orientation (Check all that apply) ☐ Underground ☐ Overhead ☐ Crossing ☐ Parallel ☐ OSOW high clearance route ☐ Bridge attachment ☐ Scenic easement (Off right-of-way)		Install or attach to poles/towers: ☐ New ☐ Existing ☐ Guys (~Diameter) (Name of existing owner) (Provide details for all guy wires on plan sheets) Pothole (Subsurface excavation): ☐ Air ☐ Water Tree/vegetation control: ☐ Trim (Prune) ☐ Plant ☐ Remove (Cut) ☐ Mow ☐ Chemically treat			
11. Work Types (Check all that apply) ☐ New facility ☐ Remove ☐ Joint install ☐ Maintenance ☐ Improve or ☐ Discontinue, repair existing left in place				14. Is the facility near a survey monument? HMM 09-15-35 If yes, call (866) 568-2852 or email geodetic@dot.wi.gov . ☐ Yes ☐ No 15. Will appurtenances be installed with the facility? If yes, provide a description and/or specification for each item. ☐ Yes ☐ No 16. Trans 401 category? If Major, provide a formal erosion control plan. HMM 09-15-55 ☐ Major ☐ Minor 17. Is the Environmental Checklist included? See HMM 09-15-16 Attachment 1. WisDOT will not review a permit application until a completed Checklist is submitted. ☐ Yes ☐ No	

* Includes permanent restoration. If the permitted work has not started by the "Work Finish Date," this permit is null and void. If the permitted work has started but has not been completed by the "Work Finish Date," the work shall not be completed unless authorized through an approved written time extension or a subsequent permit. **ANY PERMIT ISSUED IS REVOCABLE.**

18. Utility Person Responsible for Construction	Telephone Number	It is understood and agreed that WisDOT approval is subject to the applicant's full compliance with all pertinent statutes, as well as any regulations and rules of other jurisdictional agencies (which may be more restrictive), any supplemental permit provisions, and WisDOT's Utility Accommodation Policy , current edition.
19. Utility or Project 24/7 Emergency Contact	Telephone Number	
20. Provide company name and address of utility authorized representative if not employed by the applicant.		(Utility Authorized Representative Signature – If filled via computer, brush script font) (Date)
21. Provide additional work details, if needed (use back page or include separate pages)		(Title) (Telephone Number) (Email Address)
This permit does not transfer any land, or give, grant or convey any land right, right in land, or easement in WisDOT right-of-way. It is not assignable or transferrable. If the utility facility changes ownership, this permit terminates. The new owner must then obtain a permit to occupy, operate and maintain the facility in WisDOT right-of-way.		

Completed by Wisconsin Department of Transportation – REVIEW AFTER PERMIT ISSUANCE

☐ UTILITY SHALL NOTIFY WisDOT REPRESENTATIVE LISTED BELOW 3 DAYS BEFORE STARTING ANY WORK: Region contact, office address, telephone number and email address Wisconsin DOT _____	☐ Review All Supplemental Permit Provisions ☐ Revisions Made to Drawings or Other Pages ☐ Lane Closure System notification required HMM 09-15-60 ☐ Insurance or performance bond required ☐ Joint installation: See permit(s) # _____ ☐ Private utility (Non-public ownership and/or use) ☐ Expedited Service Connection Permit ☐ This permit voids & supersedes # _____ issued: _____ ☐ _____	Application Received
		Application Completed
		Permit Issued
		Permit Extended
		Permit Amended
		Permit Number

(WisDOT Authorized Representative Signature – If filled via computer, Brush Script font)

Use this section to provide information that does not fit on front page

INDEMNIFICATION

This Applicant shall save and hold the State, its officers, employees, agents, and all private and governmental contractors and subcontractors with the State under Chapter 84 Wisconsin Statutes harmless, as allowed by Wisconsin law, from actions of any nature whatsoever (including any by Applicant itself) which arise out of, or are connected with, or are claimed to arise out of or be connected with any of the work done by the Applicant, or the construction or maintenance of facilities by the Applicant, pursuant to this permit or any other permit issued by the State for location of property, lines or facilities on highway right-of-way, (1) while the Applicant is performing its work, or (2) while any of the Applicant's property, equipment, or personnel, are in or about such place or the vicinity thereof, or (3) while any property constructed, placed or operated by or on behalf of Applicant remains on the State's property or right-of-way pursuant to this permit or any other permit issued by the State for location of property, lines or facilities on highway right-of-way; including without limiting the generality of the foregoing, all liability, damages, loss expense, claims, demands and actions on account of personal injury, death or property loss to the State, its officers, employees, agents, contractors, subcontractors or frequenters; to the Applicant, its employees, agents, contractors, subcontractors, or frequenters; or to any other persons, whether based upon, or claimed to be based upon, statutory (including, without limiting the generality of the foregoing, worker's compensation), contractual, tort, or whether or not caused or claimed to have been caused by active or inactive negligence or other breach of duty by the State, its officers, employees, agents, contractors, subcontractors or frequenters; Applicant, its employees, agents, contractors, subcontractors or frequenters; or any other person.

Without limiting the generality of the foregoing, the liability, damage, loss, expense, claims, demands and actions indemnified against shall include all liability, damage, loss, expense, claims, demands and actions for damage to any property, lines or facilities placed by or on behalf of the Applicant pursuant to this permit or any other permit issued by the State for location of property, lines or facilities on highway right-of-way in the past or present, or that are located on any highway or State property or right-of-way with or without a permit issued by the State, for any loss of data, information, or material; for trademark, copyright or patent infringement; for unfair competition or infringement of personal or property rights of any kind whatever. The Applicant shall at its own expense investigate all such claims and demands, attend to their settlement or other disposition, defend all actions based thereon and pay all charges of attorneys and all other costs and expenses of any kind arising from any such liability, damage, loss, claims, demands and actions.

Any transfer, whether voluntary or involuntary, of ownership or control of any property constructed, placed or operated by or on behalf of the Applicant that remains on the State's property or right-of-way pursuant to this permit shall not release Applicant from any of the indemnification requirements of this permit, unless the State is notified of such transfer in writing. Any acceptance by any other person or entity, whether voluntary or involuntary, of ownership or control of any property constructed, placed or operated by or on behalf of the Applicant that remains on the State's property or right-of-way pursuant to this permit, shall include acceptance of all of the indemnification requirements of this permit by the other person or entity receiving ownership or control.

DESIGN NOTES

1. POLE AND FOUNDATIONS ARE DESIGNED IN ACCORDANCE WITH THE FOLLOWING CODES:
- 2015 INTERNATIONAL BUILDING CODE
 - AASHTO LRFD SPECIFICATIONS FOR STRUCTURAL SUPPORT FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS, 2015 EDITION.
2. POLE ANALYSIS AND FOUNDATION DESIGN ARE BASED ON THE FOLLOWING CRITERIA:
- DESIGN WIND SPEED (Vult): 105 MPH (MAXIMUM)
 - RISK CATEGORY: LOW / ADT > 10,000 (300-YEAR MRI)
 - EXPOSURE CATEGORY: C
 - TOPOGRAPHIC CATEGORY: 1
 - SEISMIC DESIGN CRITERIA:
 - SOIL SITE CLASS: D (ASSUMED)
 - SPECTRAL RESPONSE, S_s: 0.100g (MAXIMUM)
 - SPECTRAL RESPONSE, S₁: 0.050g (MAXIMUM)
 - SEISMIC DESIGN CATEGORY: D
 - FACTORED STRUCTURE BASE REACTIONS ARE CALCULATED AS FOLLOWS:

ULTIMATE BASE MOMENT:	2,320 LB-FT
ULTIMATE BASE SHEAR:	240 LB
ULTIMATE BASE AXIAL:	110 LB
 - SHOULD ANY OF THE SITE-SPECIFIC PARAMETERS BE HIGHER THAN WHAT IS NOTED ABOVE, THE EOR SHALL BE CONTACTED TO PROVIDE A REVISED DESIGN.
3. THE TOP OF THE FOUNDATION OUTSIDE OF THE PIPE FOOTPRINT SHALL BE SLOPED BETWEEN 1' AND 3' TO ALLOW FOR ADEQUATE DRAINAGE.
4. THE PROPOSED DETAILS OF THIS DRAWING SHALL NOT BE USED WHERE SOILS CONSIST OF SOFT CLAY, PEAT, OR SOIL WHERE A SMALL DIAMETER REBAR (#5 OR SMALLER) OR METAL PROBE PENETRATES EASILY INTO THE SOIL BY MORE THAN 6" WHEN THE FULL WEIGHT OF A PERSON IS APPLIED. IF UNEXPECTED SOIL IS FOUND ON SITE, THE CONTRACTOR SHALL CONTACT THE EOR FOR DIRECTION.

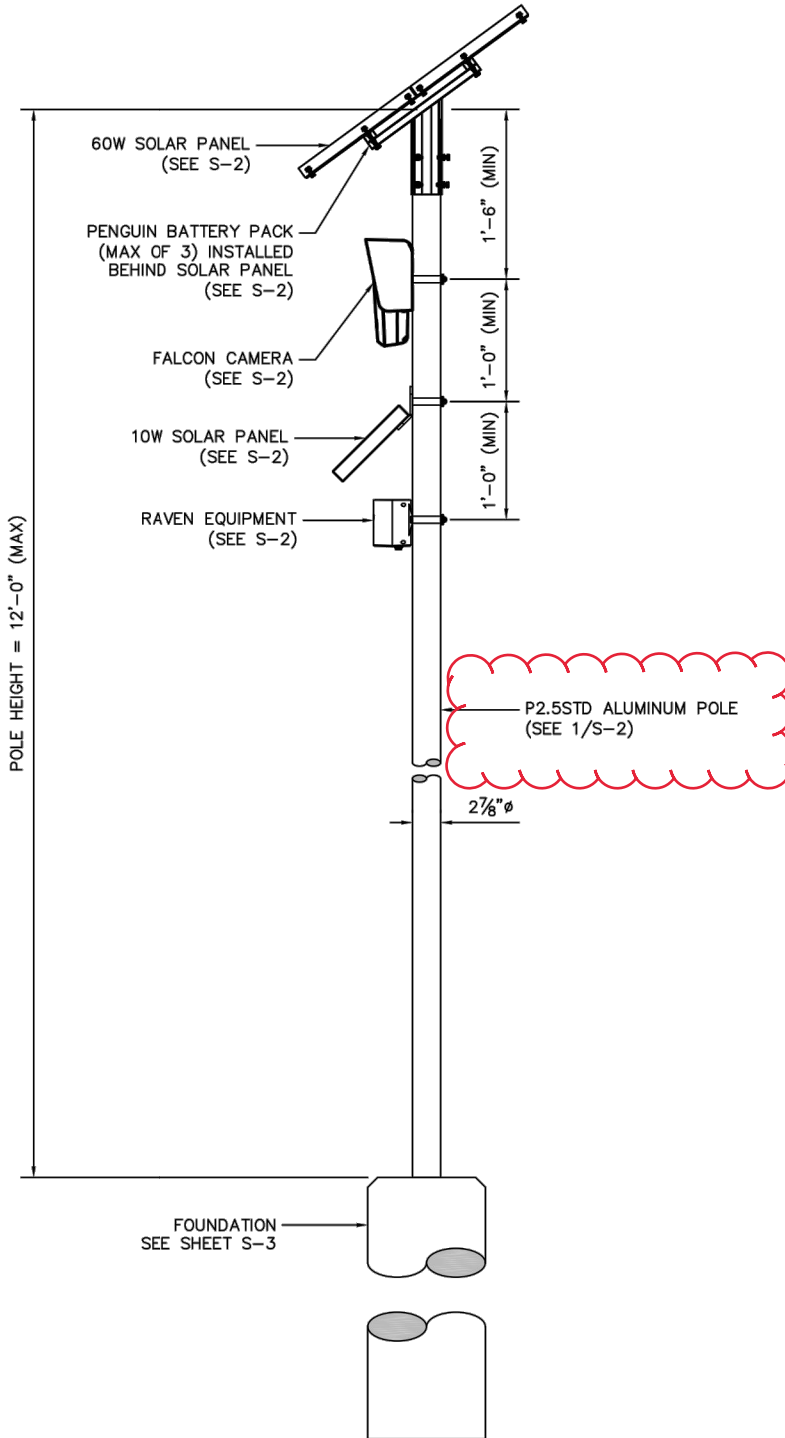
GENERAL & CONSTRUCTION NOTES

- CONTRACTOR SHALL CONTACT DESIGNATED AGENCY TO LOCATE ALL UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION.
- CONTRACTOR SHALL APPLY AND OBTAIN AN APPROVED TRAFFIC CONTROL PLAN IN ACCORDANCE WITH MUTCD AND LOCAL JURISDICTION STANDARDS.
- CONTRACTOR SHALL RESTORE ALL DISTURBED AREAS TO ORIGINAL SITE CONDITION TO THE SATISFACTION OF STATE DEPARTMENT OF TRANSPORTATION AND LOCAL JURISDICTION.
- ALL WORK SHALL CONFORM TO APPLICABLE ELECTRICAL CODES EXCEPT WHEN STATE DEPARTMENT OF TRANSPORTATION OR LOCAL JURISDICTION STANDARDS SUPERSEDE.
- POLE AND PROPOSED EQUIPMENT SHALL BE CONNECTED TO SOLID BARE BOND GROUND AND GROUNDING ROD IN POLE FOUNDATION.
- ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH SPECIFICATIONS DEFINED BY THE STATE DEPARTMENT OF TRANSPORTATION OR LOCAL JURISDICTION, UNLESS SPECIFICALLY STATED OR SHOWN OTHERWISE HEREIN.

ADA COMPLIANCE NOTES

- ALL SIDEWALK CONSTRUCTION SHALL BE IN ACCORDANCE WITH ADA TITLE II, STATE DEPARTMENT OF TRANSPORTATION, AND LOCAL JURISDICTION STANDARDS.
- STATE DEPARTMENT OF TRANSPORTATION CURRENT EDITION STANDARDS SHALL BE USED FOR PEDESTRIAN CONTROL PLANS WHEN CLOSURE OF SIDEWALK IS REQUIRED FOR CONSTRUCTION.
- MINIMUM CLEAR PEDESTRIAN ACCESS ROUTE (PAR) SHALL BE 48" WIDE.
- NO OBSTRUCTION IS PERMITTED ALONG THE WIDTH OF THE SIDEWALK, UP TO AN ELEVATION OF 7'-0" ABOVE GRADE.

NOTE: STRUCTURE MUST BE LOCATED A MINIMUM OF 12-FT FROM THE TRAVELWAY.



1 POLE ELEVATION DETAIL
S-1 SCALE: N/A

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PROJECT INFORMATION:

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CONFIGURATION DETAILS
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AUTOMATIC LICENSE
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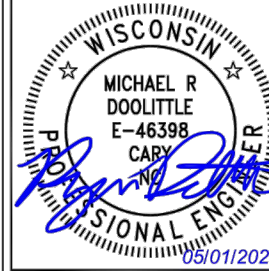
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GENERAL NOTES
AND POLE
ASSEMBLY DETAIL

SHEET NUMBER:

S-1

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PROJECT INFORMATION:

CUMBERLAND
POLICE DEPARTMENT
LICENSE PLATE READER
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PLANS PREPARED BY:

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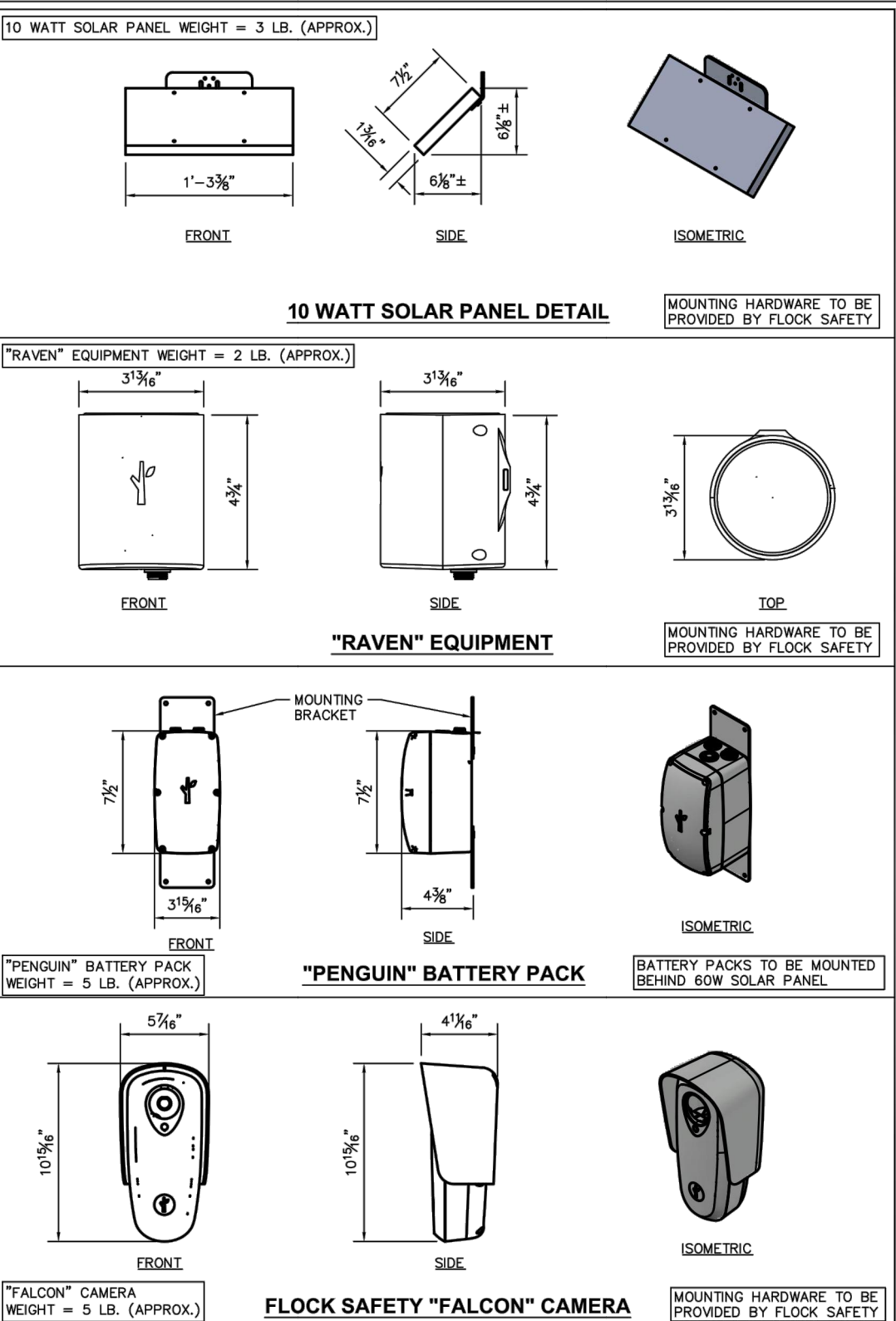
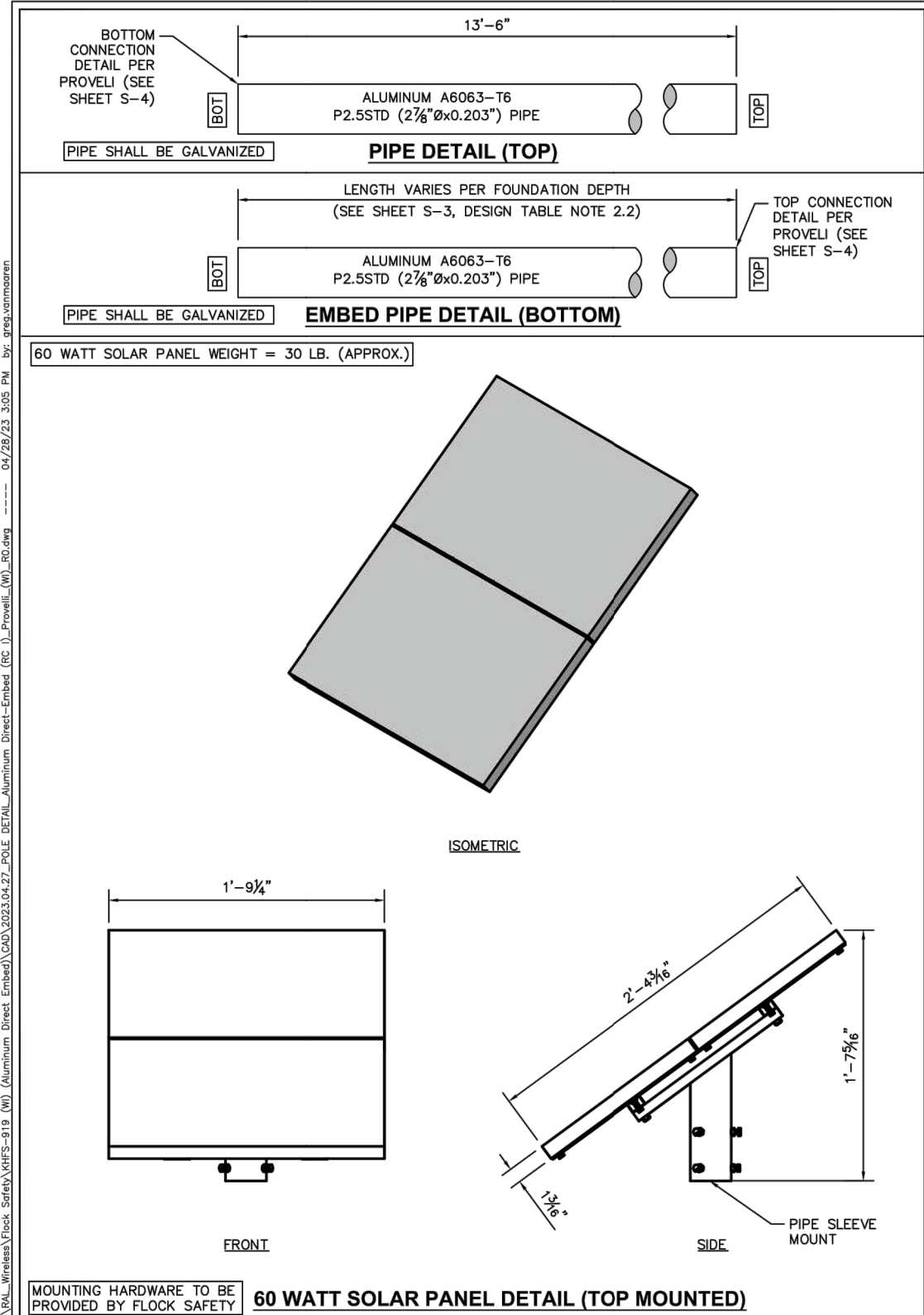
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SHEET NUMBER: S-2

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FOUNDATION DESIGN NOTES

1. FOUNDATION DESIGN REACTIONS ARE BASED ON INTERNAL CALCULATIONS BY KIMLEY-HORN. ANALYSIS CRITERIA CAN BE FOUND ON SHEET S-1.
2. FOUNDATION MAY BE CAST-IN-PLACE, OR PRECAST.
3. CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4,000 PSI

3.A. MIX DESIGN TO BE IN ACCORDANCE WITH ACI 318, CHAPTER 26

3.B. COARSE AGGREGATE FOR NORMAL WEIGHT CONCRETE SHALL CONFORM TO ASTM C33 SIZE #57

3.C. COLD WEATHER PLACEMENT SHALL COMPLY WITH ACI 306.1

3.D. HOT WEATHER PLACEMENT SHALL COMPLY WITH ACI 305 R
4. ALL EXPOSED CONCRETE CORNERS SHALL BE CHAMFERED 1"
5. CONTRACTOR SHALL VERIFY THAT THE PROPOSED FOUNDATION CAN BE BUILT AS SHOWN. CONTRACTOR SHALL OBTAIN EOR APPROVAL FOR ANY CHANGES TO THE PROPOSED DESIGN.
6. CONTRACTOR SHALL FIELD VERIFY THE PRESENCE OF GROUNDWATER IN THE TOP 10-FT OF SOIL PRIOR TO CONSTRUCTION. IF GROUNDWATER IS ENCOUNTERED, ONE OF THE FOLLOWING METHODS SHALL BE IMPLEMENTED:

6.A. THE CONTRACTOR SHALL PUMP EXCESS WATER OUT OF A BORE HOLE THROUGHOUT INSTALLATION PROCESS.

6.B. THE FOUNDATION MAY BE INSTALLED INSIDE INSIDE OF A SONOTUBE THAT EXTENDS TO THE FULL EMBEDMENT DEPTH. SOIL BACKFILL SHALL BE PROPERLY COMPACTED TO A MINIMUM OF 95% OF STANDARD MAXIMUM DENSITY (ASTM D 698, 100 PCF MINIMUM).

6.C. A PL¼" TEMPORARY CASING MAY BE USED DURING INSTALLATION. THE CASING SHALL BE EXTRACTED AS THE CONCRETE IS PLACED SUCH THAT A HEAD OF CONCRETE IS MAINTAINED ABOVE THE BOTTOM OF THE CASING TO PREVENT WATER INTRUSION INTO THE CONCRETE MIX.

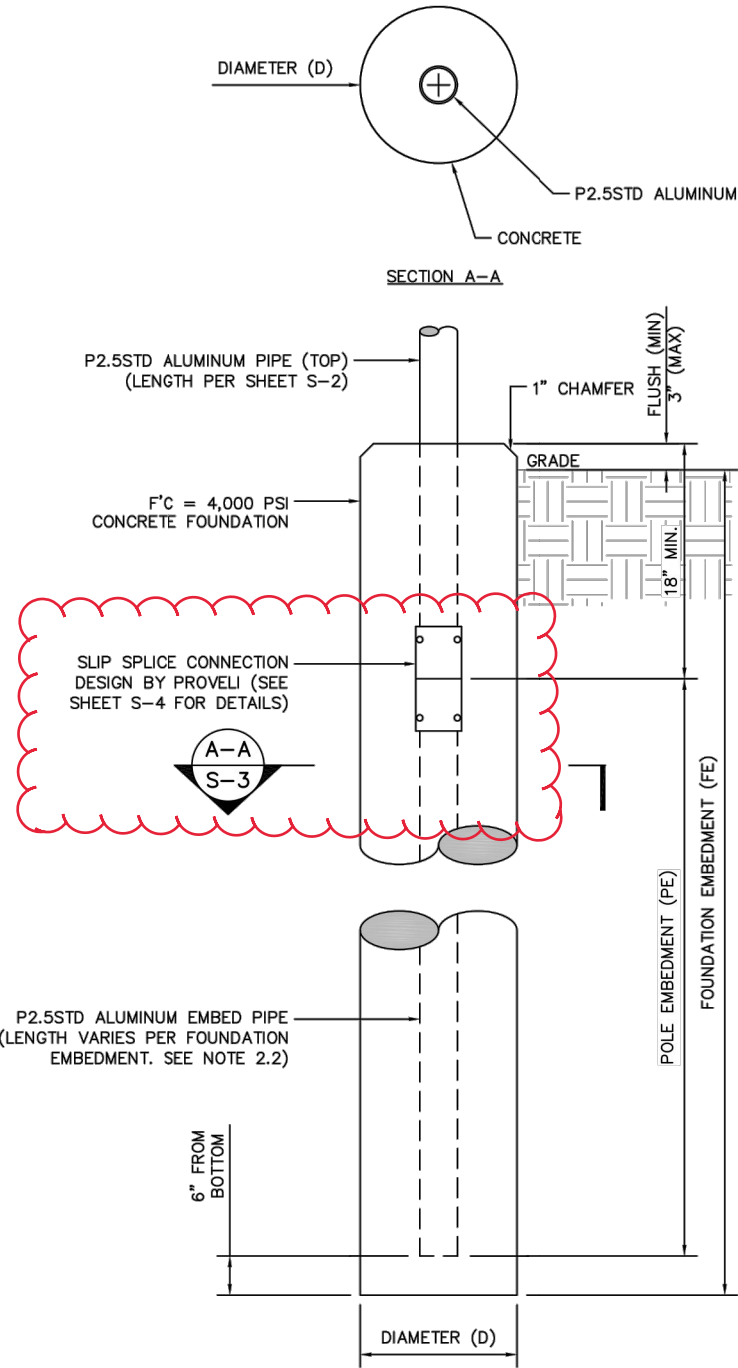
FOUNDATION DESIGN TABLE		
DIAMETER (D)	FOUNDATION EMBEDMENT (FE)	POLE EMBEDMENT (PE)
12"Ø	5'-0" (SEE NOTE 2)	3'-0" (SEE NOTE 2.1)

DESIGN TABLE NOTES:

1. DRAWINGS DENOTE A GENERIC FOUNDATION CONFIGURATION AND ARE NOT TO SCALE. REFER TO TABLE ABOVE FOR OVERALL DIMENSIONS.
2. FOUNDATION EMBEDMENT (FE) SHALL BE THE MAXIMUM OF THE DIMENSIONS SPECIFIED, OR 6" BELOW THE FROST DEPTH APPLICABLE TO THE SITE-SPECIFIC LOCATION. CONTRACTOR SHALL VERIFY FROST DEPTH PRIOR TO CONSTRUCTION. SEE SHEET R-1 FOR ADDITIONAL INFORMATION.

2.1. POLE EMBEDMENT (PE) SHALL TERMINATE 6" LESS THAN THE FOUNDATION EMBEDMENT (FE) FOR ALL FINAL CONFIGURATIONS.

2.2. FINAL EMBED PIPE LENGTH SHALL BE THE SPECIFIED FOUNDATION EMBEDMENT (FE) REQUIRED TO MEET FROST DEPTH REQUIREMENTS MINUS 2-FT. FINAL EMBED PIPE SIZES MAY VARY ACCORDINGLY, FIELD CUT TO LENGTH AS REQUIRED.
- 2.3. PIPES SHALL BE JOINED TOGETHER IN ACCORDANCE WITH REFERENCED PROVELI SLIP SPLICED CONNECTION DETAIL. CONTACT PROVELI FOR DESIGN STRENGTH CALCULATIONS.



1 FOUNDATION DETAIL
S-3 SCALE: N/A



PROJECT INFORMATION:

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PLANS PREPARED BY:



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S-3



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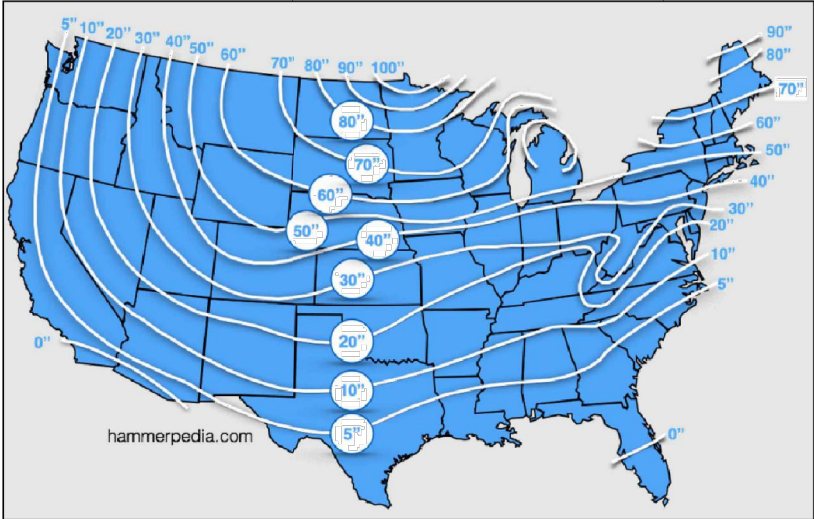
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FROST DEPTH NOTES

1. ESTIMATED FROST DEPTHS FOR VARIOUS COUNTIES ARE LISTED IN THE PROVIDED TABLES.
2. CONTRACTOR IS RESPONSIBLE FOR VERIFYING FROST DEPTHS WITH THE LOCAL JURISDICTION REQUIREMENTS.



State	County	Design Frost Depth (in.)
WI	ADAMS	70
WI	ASHLAND	80
WI	BARRON	80
WI	BAYFIELD	80
WI	BROWN	60
WI	BUFFALO	80
WI	BURNETT	80
WI	CALUMET	60
WI	CHIPPEWA	80
WI	CLARK	70
WI	COLUMBIA	60
WI	CRAWFORD	70
WI	DANE	60
WI	DODGE	60
WI	DOOR	60
WI	DOUGLAS	80
WI	DUNN	80
WI	EAU CLAIRE	80
WI	FLORENCE	70
WI	FOND DU LAC	60
WI	FOREST	70
WI	GRANT	60
WI	GREEN	60
WI	GREEN LAKE	70
WI	IOWA	60
WI	IRON	80
WI	JACKSON	80
WI	JEFFERSON	60
WI	JUNEAU	70
WI	KENOSHA	60
WI	KEWAUNEE	60
WI	LA CROSSE	70
WI	LAFAYETTE	60
WI	LANGLADE	70
WI	LINCOLN	80
WI	MANITOWOC	60
WI	MARATHON	80
WI	MARINETTE	60
WI	MARQUETTE	70
WI	MENOMINEE	70
WI	MILWAUKEE	60
WI	MONROE	70
WI	OCONTO	60
WI	ONEIDA	80
WI	OUTAGAMIE	70
WI	OZAUKEE	60

State	County	Design Frost Depth (in.)
WI	PEPIN	80
WI	PIERCE	80
WI	POLK	80
WI	PORTAGE	70
WI	PRICE	80
WI	RACINE	60
WI	RICHLAND	70
WI	ROCK	60
WI	RUSK	80
WI	SAINT CROIX	80
WI	SAUK	70
WI	SAWYER	80
WI	SHAWANO	70
WI	SHEBOYGAN	60
WI	TAYLOR	80
WI	TREMPEALEAU	80
WI	VERNON	70
WI	VILAS	80
WI	WALWORTH	60
WI	WASHBURN	80
WI	WASHINGTON	60
WI	WAUKESHA	60
WI	WAUPACA	70
WI	WAUSHARA	70
WI	WINNEBAGO	70
WI	WOOD	70

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SHEET TITLE:

FROST DEPTH
REQUIREMENTS

SHEET NUMBER:

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CUMBERLAND
POLICE DEPARTMENT
LICENSE PLATE READER
INSTALLATION

PLANS PREPARED BY:

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ATLANTA, GA 30308
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WWW.KIMLEY-HORN.COM

REV: DATE: ISSUED FOR: BY:

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1	05/02/23	PERMITTING	MRD
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LICENSER:

FOR REFERENCE
ONLY

KHA PROJECT NUMBER:

014681000.1.109

DRAWN BY: CHECKED BY:

RCG

TLL

SHEET TITLE:

EQUIPMENT AND
FOUNDATION
DETAILS

SHEET NUMBER:

D.05

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Lane Closure System (LCS) Notification Worksheet
(Permittee will enter the data into the LCS)



General Section:

1. Permit Number
2. General Description (brief description of the type of work)
3. County (Begin/End if different)
4. Highway/Direction
5. Primary Contact (WisDOT Regional Permit Coordinator)
6. Emergency Traffic Control Contractor Contact (name/number: 24-hour contact)
7. Secondary Contact (other WisDOT contact names if applicable)
8. Law Enforcement Contact (if applicable)
9. Other Contact (such as contractor or utility name/number)

Each Facility:

1. Type (mainline, ramp, bridge, system interchange)
2. Closure/Restriction (lanes/shoulders affected)
3. Duration (daily/nightly, weekly, continuous, long term)
4. Begin/End Date
5. Begin/End Time
6. Begin/End Location
7. Oversize/Overweight Restrictions (height, width, weight restrictions if applicable)
8. Detour Route (if applicable)



SUPPLEMENTAL PERMIT PROVISIONS
Cumberland Police Department
Automated License Plate Reader Cameras
Permit #001385 – Issued 11/22/22
WIS 48 & US 63
City of Cumberland
Barron County



PROJECT DESCRIPTION. The City of Cumberland Police Department (CPD) is installing automated license plate reader (ALPR) cameras at two locations on WIS 48 and one location on US 63 as an aid to prevent and solve crimes. The use of the cameras is considered a communications-type utility and is allowed under WisDOT's Utility Accommodation Policy [HMM 09-15-65](#), 4.1.

1. **LEGAL USE.** Surveillance cameras shall only be used as allowed by Wisconsin statutes. For example, the use of cameras is currently *prohibited* to enforce red light running at traffic signals.
2. **REVOCAION BY WisDOT.** WisDOT may revoke this permit if its own use or sale of the right-of-way (ROW) would be facilitated by relocation of CPD's facility and shall provide CPD with written notice a minimum of one year prior to such revocation. During this period, WisDOT shall work with CPD to find a suitable replacement area on ROW near the terminated location. WisDOT shall not compensate CPD to move its facility within the ROW in keeping with WisDOT's policy on compensable and non-compensable utility facility moves. If necessary to maintain uninterrupted service, CPD shall be allowed to temporarily locate in WisDOT ROW at a mutually acceptable site for up to 180 days during the relocation of its facilities to the permanent site.
3. **TERMINATION BY PERMITTEE.** CPD may terminate this permit upon 30 days written notice to WisDOT. Upon such termination, CPD shall remove its facility from the ROW unless WisDOT notifies CPD that WisDOT will take over operation and maintenance of the facility for its own traffic operations.
4. **WORK RESTRICTIONS.** CPD is authorized to work weekdays between sunrise and sunset. Weekend work may be allowed upon prior approval from WisDOT.
5. **TRAFFIC CONTROL.** All WZTC shall be in accordance with the [Work Zone Field Manual](#) or the [Wisconsin Manual on Uniform Traffic Control Devices](#).
6. **LANE CLOSURE SYSTEM (LCS) REQUIREMENTS.** To satisfy LCS requirements for WisDOT's [511 System](#), CPD shall notify WisDOT a minimum of **seven calendar days** prior to **any lane or shoulder closure**. CPD may use the [LCS Notification Worksheet](#) if needed and submit it to WisDOT's [Jennifer Leech](#) (715) 836-2853 for review. WisDOT may revise the information, but CPD shall enter it into [LCS](#) unless notified by WisDOT that it will perform the entries. For **emergency** situations when any type of shoulder, lane, or road closure is required, CPD shall call WisDOT's [Traffic Management Center](#) at 800-375-7302.

TABLE 108-1 CLOSURE TYPE AND REQUIRED MINIMUM ADVANCE NOTIFICATION TO WISDOT	
Closure type with height, weight, or width restrictions (available width, all lanes in one direction < 16')	MINIMUM NOTIFICATION
Lane and shoulder closures	7 calendar days
Full roadway closures	7 calendar days
Ramp closures	7 calendar days
Detours	7 calendar days
Closure type without height, weight, or width restrictions (available width, all lanes in one direction ≥ 16')	MINIMUM NOTIFICATION
Lane and shoulder closures	3 business days
Ramp closures	3 business days
Modifying all closure types	3 business days

7. **WORK AREA PROTECTION DURING NON-WORK TIMES.** CPD shall store its equipment and materials off the ROW during non-work times if possible. If necessary, CPD may store its equipment and materials on the ROW provided they are placed as close to the ROW line as possible and outside of the clear zone. CPD shall ensure that any excavation left open during non-work times is well marked and secured from public intrusion.

8. **ROW RESTORATION.** CPD shall restore any WisDOT ROW disturbed to its original (as best as practical) condition within **two weeks** after installing its facilities. WisDOT may allow time extensions for restoration in the case of inclement weather, poor soil conditions, or if CPD's operations would track over the same disturbed areas – provided that proper erosion control devices are in place to protect the disturbed areas.

Should future maintenance work on CPD's facilities result in the disturbance of the existing ROW, CPD shall restore the ROW to its original condition as soon as possible. The basic drainage pattern of the highway shall remain undisturbed by the permitted work. Upon project completion, all spoils, debris, refuse, and waste resulting from the permitted work shall be removed from the work site.

9. **CONSTRUCTION NOTIFICATIONS.** CPD shall contact the Northwest Region utility permit coordinator, Ellen Stoll, at 715-392-7981 or [email](#) at least three working days prior to the start of construction.

CPD shall call Diggers' Hotline 800-242-8511 at least three working days prior to the start of any excavation.

CPD shall provide WisDOT with the names and telephone numbers of the people in charge of its field operations. This includes people who are responsible for the overall project or separate crews and includes any contractors hired by CPD. Field personnel shall have cellular phones that would enable a WisDOT representative to contact them at any time.

10. **LONGITUDINAL & VERTICAL LOCATION.** CPD shall place its facilities as shown on the approved permit drawings. Deviations from this location may be allowed but shall first be approved by WisDOT. Revised plan sheets showing the approved deviations should be sent to WisDOT after completion.
11. **EROSION CONTROL.** A formal erosion control plan is not required if CPD can perform construction in accordance with [HMM 09-15-55](#) and [Trans 401](#). However, if any excavation remains open for more than 24 hours, then a formal erosion control plan shall be submitted to WisDOT and this provision revised accordingly. In either case, CPD shall use the appropriate erosion control best management practices (BMPs) to contain soil directly at the site to prevent disturbed soil from getting into nearby waterways and wetlands. Storm sewer and pipe underdrain inlets shall be protected with filter fabric if necessary.

All appropriate erosion control BMPs shall be in place **prior to starting construction activities**. Temporary seeding shall be used as necessary after rough grading and before project completion. CPD shall ensure that erosion control measures used to protect restored areas remain in place until replacement vegetation achieves sustained growth. Rutting due to vehicle or equipment tracks shall be smoothed out at the end of each day. CPD shall take every precaution necessary to prevent mud, dirt, or other debris from being deposited onto any travelled lane or paved shoulder. Any materials deposited on the pavement shall be promptly removed.

12. **PERMIT AT SITE.** During the performance of work described in this permit, CPD and/or its contractor(s) or subcontractor(s) shall have a fully signed and executed copy of the permit on site, **which may in electronic format**. Failure to do so may cause a temporary shutdown of the work. Repeated offenses may cause this permit to become null and void and if so, the work shall not be completed unless authorized through a subsequent permit.
13. **PERMIT TERM.** This permit is valid for as long as CPD continues to own, operate and maintain its facilities within WisDOT ROW in accordance with the terms of its permit and WisDOT's [Utility Accommodation Policy](#).
14. **WisDOT MAINTENANCE COORDINATION.** CPD shall contact Howard Schmock, WisDOT Maintenance Coordinator (715) 225-9304 or howard.schmock@dot.wi.gov if there are highway maintenance, operation, or related issues.
15. **HOLIDAY WORK RESTRICTIONS.** CPD shall not work on November 24, December 24, 25, and 31, 2022 and January 1-2, and 16, 2023.

This permit is subject to the attached drawings, these supplemental provisions, and WisDOT's *Utility Accommodation Policy*. New supplemental provisions may be added, or the existing ones deleted or amended in the future as different issues arise during the installation, operation, and maintenance of the permittee's facilities.

Attachment 1 - Environmental Checklist

Note: To print the Checklist, click on the icon and set *Pages to Print* to "© Pages 3-5"



Include this Checklist and any supplemental documentation with form dt1553, *Application/Permit to Construct, Operate and Maintain Utility Facilities on Highway Right-of-Way*. The application will be returned if the Checklist is not included or is incomplete.

Answer the following questions related to the proposed utility project to show environmental compliance or coordination with various agencies/Tribes. WisDOT's permit approval does not relieve a utility from compliance with all applicable federal, state, local and tribal laws, codes, regulations, and ordinances and shall not be construed as superseding any other governmental agency's more restrictive requirements. Keep all supporting documents on file with WisDOT's permit for its duration and provide upon request.

Remember: Supporting documentation may be required to prove environmental coordination with a regulatory agency on the Checklist. If an agency does not require documentation, a utility is not required to submit it to WisDOT. However, supply documentation if it may be helpful in WisDOT's review of the Checklist, e.g., permits, approvals, certifications, checklists, correspondence, website screenshots/PDFs, mapping, etc. Checkboxes that only have yes, no, or not applicable answers are automatically set to no or not applicable.

1. Aquatic Resource Impacts

Use the Wisconsin Wetland Inventory maps and the [DNR Surface Water Data Viewer](#) (SWDV) to identify waterways, surface waters and potential wetlands. These tools are not comprehensive, and field surveys may be required to identify aquatic resources within the footprint of a proposed project. Consult with Department of Natural Resources and U.S. Army Corps of Engineers as needed.

Does the proposed project have the potential to impact any aquatic resources (wetlands, waterways, etc.)?

- ☐ No – Skip to question 2 ☐ Yes – Continue below

State Wetland/Waterway Permit

Does the proposed project meet all necessary terms, conditions, and eligibility criteria to receive non-reporting coverage under the DNR utility general permit ([DNR-GP3-2018](#)) for wetland/waterway impacts?

- ☐ Yes – Project meets all requirements for DNR *non-reporting* utility general permit coverage
- ☐ No – Project received *reporting* utility general permit coverage or individual wetland/waterway permit <https://dnr.wisconsin.gov/topic/Sectors/UtilityPermitting.html>

- ☐ Not applicable – Project is exempt from all wetland/waterway permitting requirements

Wetlands: <https://dnr.wisconsin.gov/topic/Waterways/Permits/Exemptions.html>

Waterways: <https://dnr.wisconsin.gov/topic/Wetlands/permits/exemptions.html>

- ☐ Not applicable – Project occurs wholly within boundaries of a Native American Nation or Tribal reservation and DNR does not have jurisdiction. See question 6.

Federal Wetland/Waterway Permit

Does the proposed project meet all necessary terms, conditions, and eligibility criteria to receive no-preconstruction notification (PCN) coverage under the USACE utility or other regional general permit (RGP) or a nationwide permit (NWP) for wetland/waterway impacts?

<https://www.mvp.usace.army.mil/Missions/Regulatory/Permitting-Process-Procedures/>

- ☐ Yes – Project meets all requirements for no-PCN coverage under a USACE RGP or NWP
- ☐ No – Project covered under USACE's RGP or NWP coverage obtained through submittal of a preconstruction notification or other Section 404 permit coverage.
- ☐ Not applicable – Project does not impact waters of the United States.

2. **Protected Species**

Projects with the potential to affect protected species must be covered under the [DNR Broad Incidental Take Permit/Authorization for No/Low Impact Activities](#) or undergo an endangered resources preliminary assessment or review. A preliminary assessment may be completed through the [DNR Natural Heritage Inventory \(NHI Public Portal\)](#). An endangered resources review may be conducted by a [DNR certified endangered resources reviewer](#).

All components of the proposed project covered under this permit:

- ☐ Are covered by the DNR Broad Incidental Take Permit/Authorization for No/Low Impact Activities.
- ☐ Received one of the following results from the NHI Public Portal preliminary assessment or endangered species review. WisDOT encourages implementing DNR recommended actions.
 - No further actions are needed
 - Further actions are recommended
 - Further actions are strongly recommended
- ☐ Are implementing all required actions from the DNR endangered resources review. WisDOT also encourages implementation of DNR recommended actions.
- ☐ Are covered by an DNR Incidental Take Permit and/or USFWS coordination under the Endangered Species Act.

3. **Construction Site Stormwater Permits**

Projects that involve one acre or more of land disturbance require a utility to submit a Notice of Intent (NOI) erosion control permit under Wis. Adm. Code [NR 216](#).

Does the proposed project affect one acre or more of land disturbance?

- ☐ No – Meets criterion ☐ Yes – Coordination completed

4. **Erosion Control Plan & Stormwater Management Plans**

Does the proposed project meet the [Trans 401](#) “Major” category?

- ☐ No – Meets criterion for minor project ☐ Yes – Attach formal erosion control plan

For minor projects, immediately replace disturbed soil and topsoil and/or temporary seed and mulch the soil, which includes repairing equipment and vehicle tracks. Have erosion control devices (hay or straw bales, wattles, silt fence, erosion mat, etc.) at the site or immediately accessible in case weather conditions cause immediate action to protect bare or loose soil. Cover soil piles left overnight with plastic or protect with silt fence or other approved perimeter control devices on the downslope side to prevent possible runoff.

Does the proposed project require a Stormwater Management Plan?

- ☐ No – Meets criterion ☐ Yes – Coordination completed

For more information: [DNR Erosion Control and Stormwater Management Plans](#)

5. **Wisconsin Historic Preservation Database**

Are any historic resources located within the proposed project limits?

- ☐ No – Meets criterion ☐ Yes – Coordination completed

Contact: [State Historic Preservation Office](#) or go to: [Wisconsin Historic Preservation Database](#)

6. **Tribal Government Coordination**

Is any part of the work located within the reservation boundaries of a Native American Nation or Tribal reservation? Any utilities placed within a Native American Nation or Tribal reservation require Bureau of Indian Affairs (BIA)/Tribal approval prior to placing their facilities in WisDOT ROW.

- ☐ No – Meets criterion ☐ Yes – Coordination completed

Tribal Government Contacts: <http://witribes.wi.gov/>

Note: A utility must obtain a Tribal permit and BIA approval of a NEPA document to proceed with utility work on a STH within a Tribal Reservation. WisDOT's utility permit does not grant automatic approval.

7. Open or Closed Contaminated Sites, DNR Water Supply Permit, Underground Storage Tanks (USTs), Leaking Underground Storage Tanks (LUSTs)

Does the proposed project affect any of these items?

Decision \ Item	Contaminated sites	DNR water supply permit	USTs	LUSTs
No – Meets criterion	☒	☒	☒	☒
Yes – Coordination completed	☐	☐	☐	☐

DNR: [Wisconsin Remediation and Redevelopment Database \(WRRD\)](#) and [Remediation & Redevelopment \(RR\) Program staff contacts](#)

DATCP: [MyDATCP: Storage Tank Search](#)
[Region Environmental Coordinators and Regionwide SWECE and Mega/Major project coordinators](#)

8. Asbestos

Does the project include replacement of asbestos wrapped utility conduit or Transite piping?

☒ No – Meets criterion ☐ Yes – Document who will complete required notification to the [DNR](#) or [DHS](#), the abatement methods, and the disposal location.

9. Project Comments

Provide any additional comments or extenuating circumstances that may assist in the review of the project's environmental coordination. List all utility work request, project plan set, or other identification numbers or references included in the environmental coordination and permitting of the project.

Certification Statement: Upon executing the signature below, the signatory certifies that the Checklist is complete, all information is accurate and true, and all required environmental compliance/coordination is complete and on file with the utility.

Disclaimer: Any change in project scope requires this Checklist to be resubmitted and certified to reflect the most updated set of project details.

Signature:  Date: 11/09/2022

Name & Title (print): Heather Thayer, Project Manager

Company: Kimley-Horn & Associates

Email: heather.thayer@kimley-horn.com

Flock Safety Tech Specs

License plate reading cameras that capture more evidence for your city.



Dual Solar Panels

- Voltage: 18-20V
- Weight: 25.73 lbs (with hardware)
- Length: 21.25"
- Width: 28"
- Mount: Pole top or side of existing pole

Pole

- DOT breakaway pole - 12' installed height
- Diameter: 2.875" OD, 2.125" ID
- Material: 6061 Aluminum w/ black coating
- Alloy: 6061
- Weight: 32 lbs

Camera

- Length: 10.5"
- Height: 4.5"
- Depth: 5.5"
- Mounting: Adjustable band clamps
- Weight: 3.6 lbs
- Footage: Uploads via LTE
- Capture Distance: 20-90ft from vehicle
- Deployment Distance: Up to 25' from edge of roadway
- Resolution: 2508x2048
- Vehicle Speed: up to 100 MPH
- Assembly: Flock Safety in Atlanta, GA



Install Anywhere



Solar & Existing Pole



Solar & Flock Pole



Electric & Existing Pole

WI46 T35N R14W SN12

State	Wisconsin
Meridian	Fourth Extended
Township	35N
Range	14W
Section	12

Source	MapServer Query
Records	Survey Plats Land Patents

Camera #01

Don Johnson's Cumberland Motors ...

WI46 T35N R13W SN8

State	Wisconsin
Meridian	Fourth Extended
Township	35N
Range	13W
Section	8

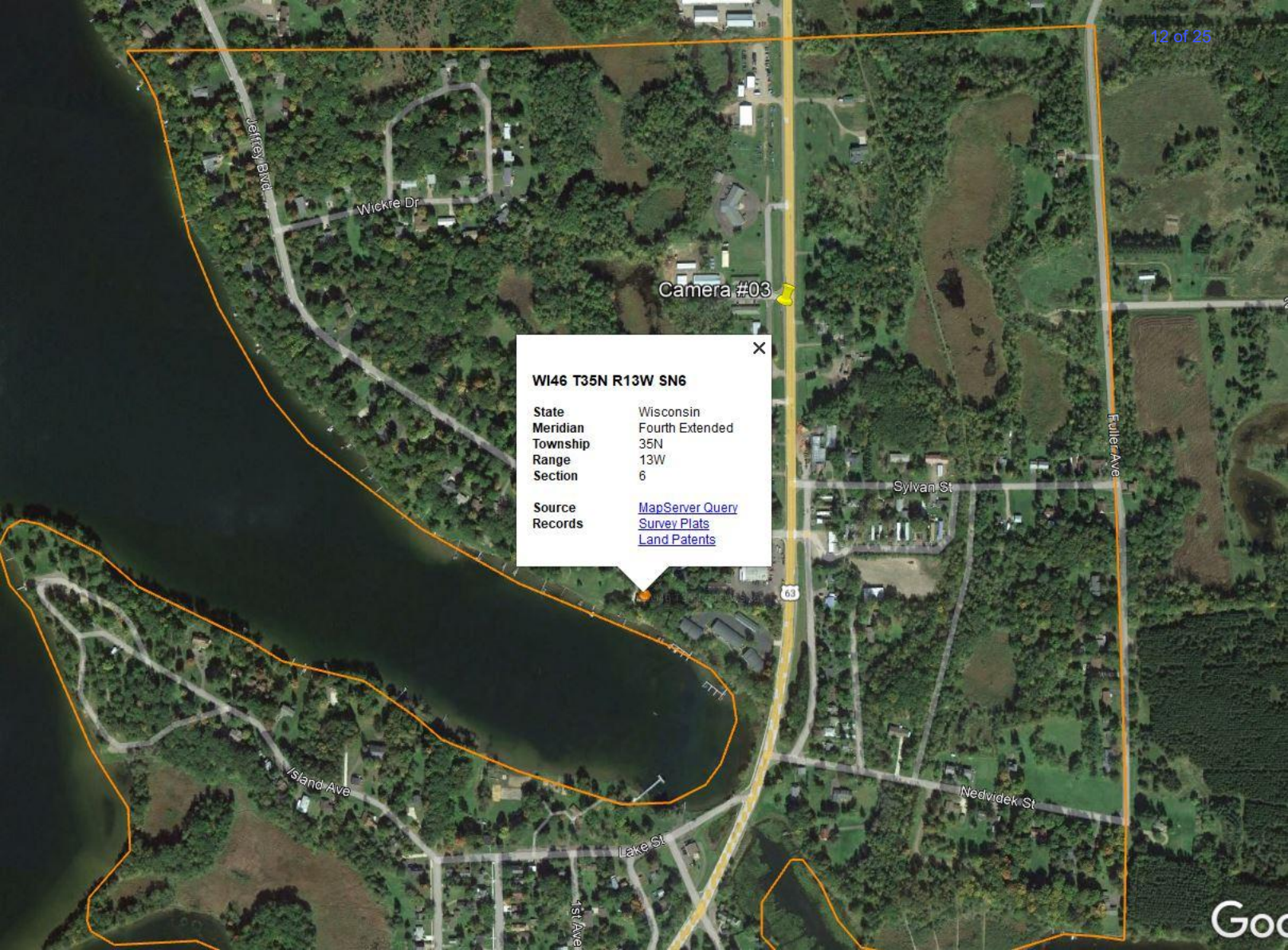
Source	MapServer Query
Records	Survey Plats Land Patents

Camera #02

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Camera #03

WI46 T35N R13W SN6

State	Wisconsin
Meridian	Fourth Extended
Township	35N
Range	13W
Section	6

Source	MapServer Query
Records	Survey Plats
	Land Patents



CUMBERLAND
POLICE DEPARTMENT
LICENSE PLATE READER
INSTALLATION

JURISDICTION:
WISCONSIN DEPARTMENT
OF TRANSPORTATION

SITE IDENTIFICATION

CUMBERLAND
POLICE DEPARTMENT
950 1ST AVE,
CUMBERLAND, WI 54829
(608) 403-6685



FLOCK SAFETY
1170 HOWELL MILL ROAD NW
SUITE 210
ATLANTA, GA 30318
PERMIT@FLOCKSAFETY.COM
415-669-0341



KIMLEY-HORN AND ASSOCIATES, INC.
817 W PEACHTREE STREET, SUITE 601
ATLANTA, GA 30308 PHONE: (312) 401-6614
ATTN.: TRACY LEHMAN, P.E.

PROJECT TEAM

INSTALLATION OF NEW POLE IN EXISTING RIGHT OF WAY SUPPORTING
LICENSE PLATE READER CAMERA FOR THE CUMBERLAND POLICE
DEPARTMENT.

PROJECT SUMMARY



VICINITY MAP

SHEET #	SHEET TITLE	DRAWN BY
T.01	TITLE SHEET	RCG
T.02	SYMBOLGY AND ABBREVIATIONS	RCG
S.01–S.03	SITE PLANS	RCG
D.01–D.04	EQUIPMENT AND FOUNDATION DETAILS	RCG
TC.01–TC.03	TRAFFIC CONTROL PLANS	RCG

SHEET INDEX



Know what's below.
Call before you dig.



PROJECT INFORMATION:

CUMBERLAND
POLICE DEPARTMENT
LICENSE PLATE READER
INSTALLATION

PLANS PREPARED BY:



817 WEST PEACHTREE STREET,
NW, SUITE 601,
ATLANTA, GA 30308
PHONE: (404) 419-8700
WWW.KIMLEY-HORN.COM

REV: DATE: ISSUED FOR: BY:

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LICENSER:



KHA PROJECT NUMBER:

014681000.1.109

DRAWN BY: CHECKED BY:

RCG

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SHEET TITLE:

TITLE SHEET

SHEET NUMBER:

T.01

GENERAL NOTES:

1.
- ALL SITE WORK SHALL BE COMPLETED AS INDICATED ON THE DRAWINGS AND FLOCK SAFETY PROJECT SPECIFICATIONS.
2.
- GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR FAMILIARIZING HIMSELF WITH ALL CONTRACT DOCUMENTS, FIELD CONDITIONS, DIMENSIONS, AND CONFIRMING THAT THE WORK MAY BE ACCOMPLISHED AS SHOWN PRIOR TO PROCEEDING WITH CONSTRUCTION. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO THE COMMENCEMENT OF WORK.
3.
- THE GENERAL CONTRACTOR AND EACH SUBCONTRACTOR ARE TO BE RESPONSIBLE FOR VERIFYING EXISTING SITE CONDITIONS, DIMENSIONS, AND THE LOCATION OF BURIED UTILITIES AT THE JOB SITE PRIOR TO THE COMMENCEMENT OF WORK. NO CLAIMS FOR EXTRA COMPENSATION FOR WORK RESULTING FROM CONFLICTS AND OMISSIONS WHICH COULD HAVE BEEN DISCOVERED BY FIELD VERIFICATION AND INSPECTION, WHETHER INDICATED IN THE CONTRACT DOCUMENTS OR NOT WILL BE ENTERTAINED OR PAID.
4.
- ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. GENERAL CONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS, AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF WORK.
5.
- ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES, AND APPLICABLE REGULATIONS.
6.
- UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
7.
- PLANS ARE NOT TO BE SCALED. THESE PLANS ARE INTENDED TO BE A DIAGRAMMATIC OUTLINE ONLY UNLESS OTHERWISE NOTED. DIMENSIONS SHOWN ARE TO FINISH SURFACES UNLESS OTHERWISE NOTED. SPACING BETWEEN EQUIPMENT IS THE MINIMUM REQUIRED CLEARANCE. THEREFORE, IT IS CRITICAL TO FIELD VERIFY DIMENSIONS, SHOULD THERE BE ANY QUESTIONS REGARDING THE CONTRACT DOCUMENTS, THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING A CLARIFICATION FROM THE ENGINEER PRIOR TO PROCEEDING WITH THE WORK. DETAILS ARE INTENDED TO SHOW DESIGN INTENT. MODIFICATIONS MAY BE REQUIRED TO SUIT JOB DIMENSIONS OR CONDITIONS AND SUCH MODIFICATIONS SHALL BE INCLUDED AS PART OF WORK AND PREPARED BY THE ENGINEER PRIOR TO PROCEEDING WITH WORK.
8.
- THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.
9.
- GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR THE SAFETY OF WORK AREA, ADJACENT AREAS AND BUILDING OCCUPANTS THAT ARE LIKELY TO BE AFFECTED BY THE WORK UNDER THIS CONTRACT. WORK SHALL CONFIRM TO ALL OSHA REQUIREMENTS AND THE LOCAL JURISDICTION.
10.
- THE CONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT CONTRACTOR'S EXPENSE TO THE SATISFACTION OF THE OWNER.
11.
- FLOCK SAFETY AND CONTRACTOR ARE SOLELY RESPONSIBLE FOR DETERMINATION AND CONFIRMATION THAT THE PROPOSED POLE LOCATION IS WITHIN THE PUBLIC RIGHT OF WAY. SITE PLAN AND ALL REPRESENTATION OF RIGHT OF WAY PROPERTY LINES ARE APPROXIMATE BY NATURE AND HAVE BEEN PRODUCED WITHOUT THE BENEFIT OF A PROFESSIONAL LAND SURVEY.

LEGEND

	EXISTING EASEMENT
	CONSTRUCTION FENCE
	EDGE OF PAVEMENT
	RIGHT OF WAY
	EXISTING WATER LINE
	EXISTING FIRE WATER LINE
	EXISTING IRRIGATION WATER LINE
	EXISTING SANITARY SEWER LINE
	EXISTING STORM DRAIN LINE
	EXISTING UNDERGROUND ELECTRIC LINE
	EXISTING GAS LINE
	EXISTING TELECOMMUNICATIONS LINE
	EXISTING UNKNOWN UTILITY LINE
	WATER VALVE
	FIRE HYDRANT
	IRRIGATION VALVE
	SEWER MANHOLE
	SEWER CLEAN OUT
	STORM DRAIN MANHOLE
	GRATED INLET
	CATCH BASIN
	LIGHT POST
	ELECTRIC PULLBOX / E BOX
	UTILITY VAULT
	GAS VALVE
	TREE
	SIGN
	BOLLARD
	DECORATIVE CONCRETE BALL
	HANDICAP PARKING
	GREASE TRAP
	COMMUNICATION VAULTS
	SURVEY CONTROL POINTS
	MISCELLANEOUS MANHOLES
	LICENSE PLATE READER CAMERA



PROJECT INFORMATION:

CUMBERLAND
POLICE DEPARTMENT
LICENSE PLATE READER
INSTALLATION

PLANS PREPARED BY:

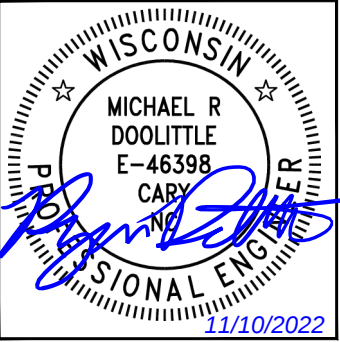


817 WEST PEACHTREE STREET,
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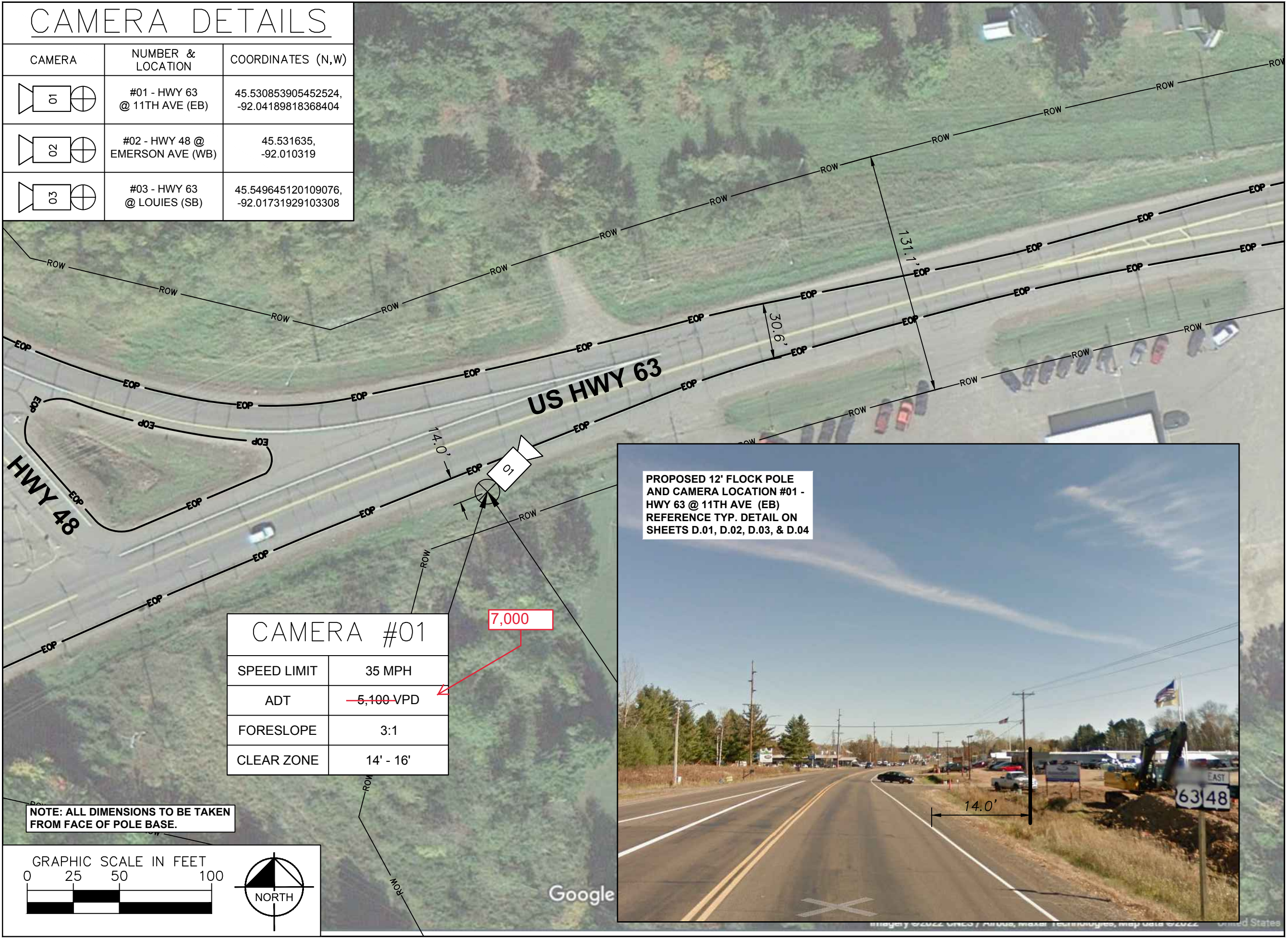
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SYMBOLGY AND
ABBREVIATIONS

SHEET NUMBER:

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PROJECT INFORMATION: _____

CUMBERLAND
POLICE DEPARTMENT
LICENSE PLATE READER
INSTALLATION

PLANS PREPARED BY: _____

817 WEST PEACHTREE STREET,
NW, SUITE 601,
ATLANTA, GA 30308
PHONE: (404) 419-8700
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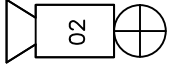
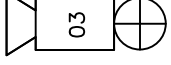
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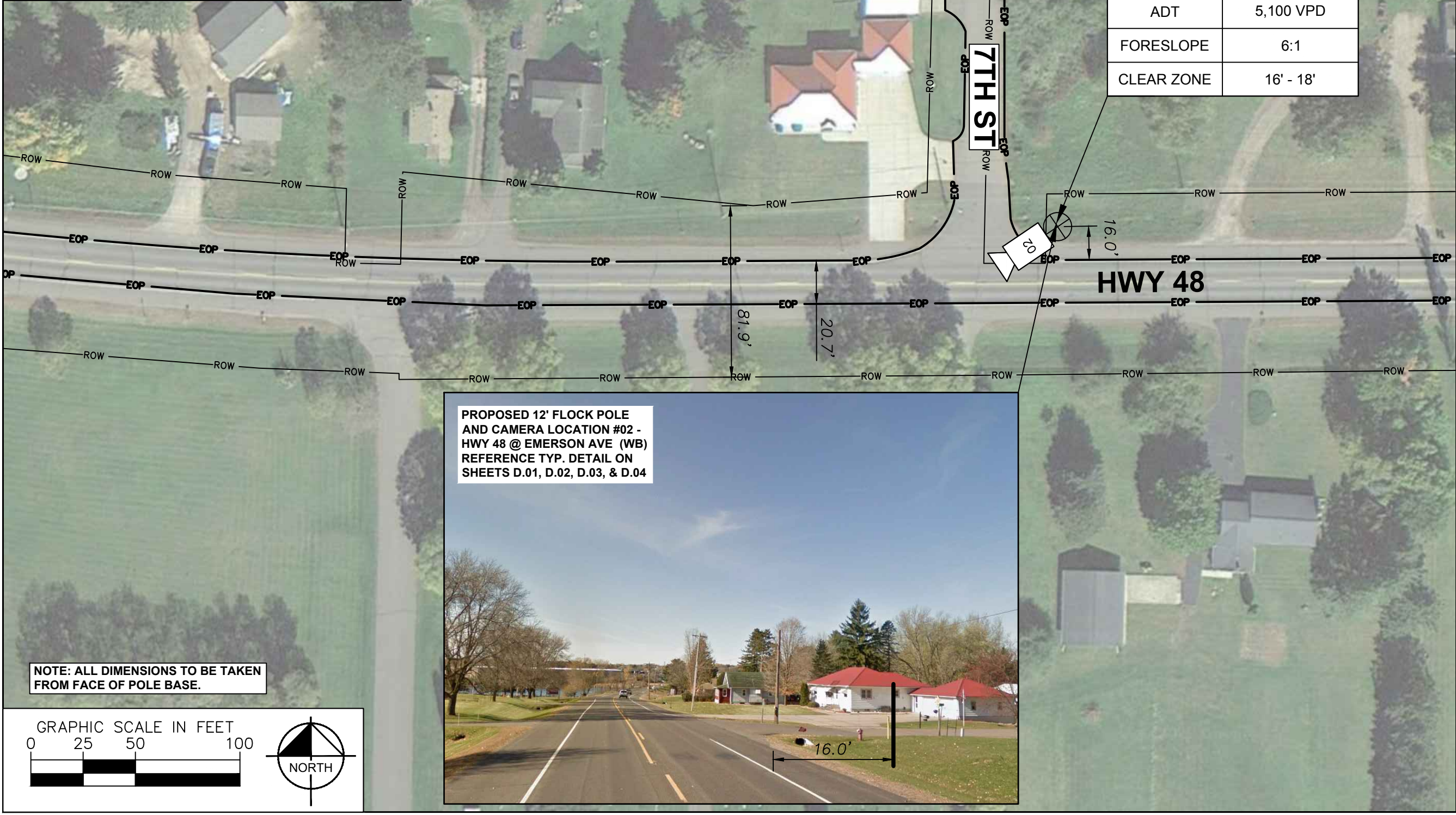
SITE PLAN

SHEET NUMBER: _____

S.01

K:\ATL_Wireless\Flock\172194\1 - KHATL - XXXX - FLOCK - CD\CASE#172194_FLOCK_CD.dwg 11/10/22 7:28 AM by: Robert Giesen

CAMERA DETAILS		
CAMERA	NUMBER & LOCATION	COORDINATES (N,W)
	#01 - HWY 63 @ 11TH AVE (EB)	45.530853905452524, -92.04189818368404
	#02 - HWY 48 @ EMERSON AVE (WB)	45.531635, -92.010319
	#03 - HWY 63 @ LOUIES (SB)	45.549645120109076, -92.01731929103308



CAMERA #02	
SPEED LIMIT	45 MPH
ADT	5,100 VPD
FORESLOPE	6:1
CLEAR ZONE	16' - 18'

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PROJECT INFORMATION:

CUMBERLAND
POLICE DEPARTMENT
LICENSE PLATE READER
INSTALLATION

PLANS PREPARED BY:

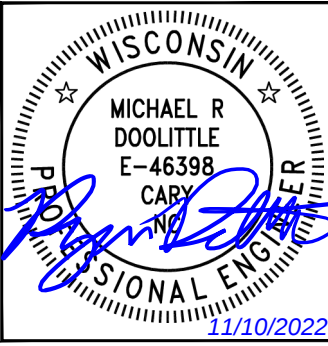
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KHA PROJECT NUMBER:

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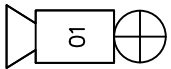
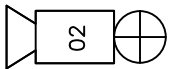
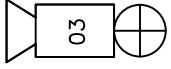
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SITE PLAN

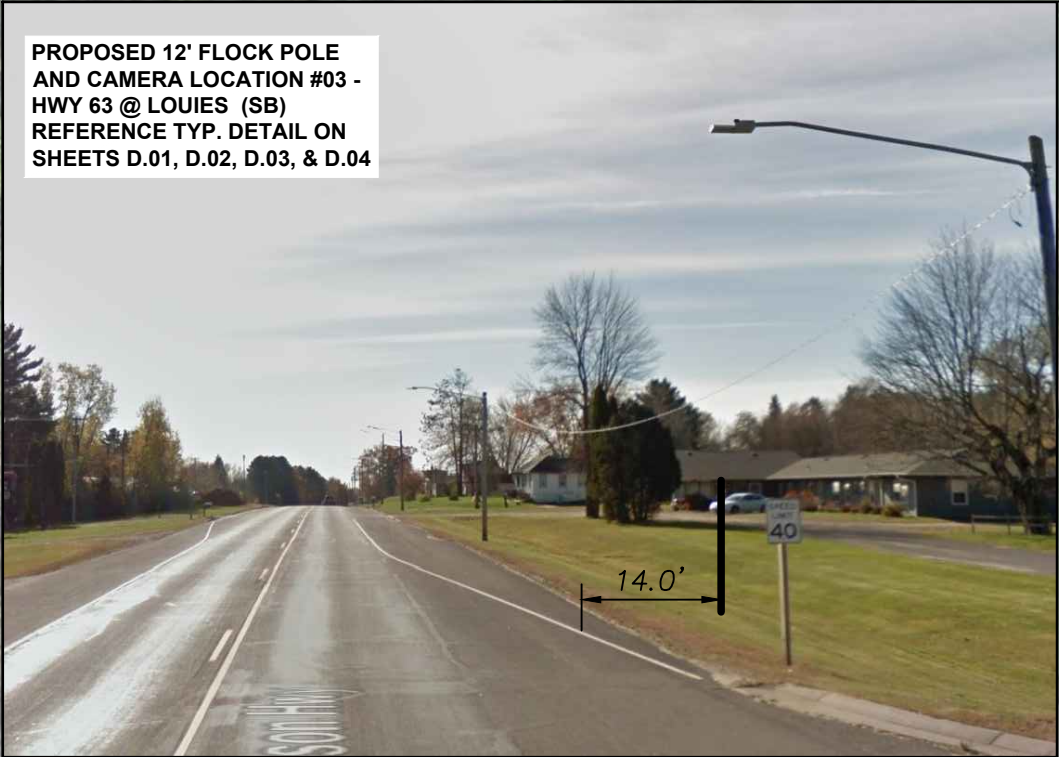
SHEET NUMBER:

S.02

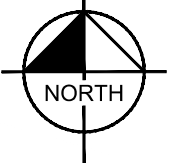
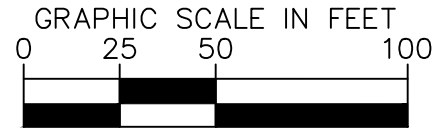
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CAMERA DETAILS		
CAMERA	NUMBER & LOCATION	COORDINATES (N,W)
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	#02 - HWY 48 @ EMERSON AVE (WB)	45.531635, -92.010319
	#03 - HWY 63 @ LOUIES (SB)	45.549645120109076, -92.01731929103308

PROPOSED 12' FLOCK POLE AND CAMERA LOCATION #03 - HWY 63 @ LOUIES (SB) REFERENCE TYP. DETAIL ON SHEETS D.01, D.02, D.03, & D.04



NOTE: ALL DIMENSIONS TO BE TAKEN FROM FACE OF POLE BASE.



CHARRIE LN

US HWY 63

CAMERA #03	
SPEED LIMIT	40 MPH
ADT	6,500 VPD
FORESLOPE	6:1
CLEAR ZONE	14' - 16'

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PROJECT INFORMATION:

CUMBERLAND
POLICE DEPARTMENT
LICENSE PLATE READER
INSTALLATION

PLANS PREPARED BY:

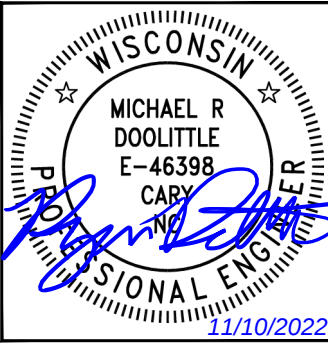
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SHEET TITLE:

SITE PLAN

SHEET NUMBER:

S.03

SEE AMENDED SHEETS 1-5 FOR ALUMINUM POLE DETAILS

DESIGN NOTES

- POLE AND FOUNDATIONS ARE DESIGNED IN ACCORDANCE WITH THE FOLLOWING CODES:
 - 2015 INTERNATIONAL BUILDING CODE
 - AASHTO LRFD SPECIFICATIONS FOR STRUCTURAL SUPPORT FOR HIGHWAY SIGNS, LUMINAIRES AND TRAFFIC SIGNALS, 2015 EDITION.
- POLE ANALYSIS AND FOUNDATION DESIGN ARE BASED ON THE FOLLOWING CRITERIA:
 - DESIGN WIND SPEED (Vult): 115 MPH (MAXIMUM)
 - RISK CATEGORY: II
 - EXPOSURE CATEGORY: C
 - TOPOGRAPHIC CATEGORY: 1
 - SEISMIC DESIGN CRITERIA:
 - SOIL SITE CLASS: D (ASSUMED)
 - SPECTRAL RESPONSE, S_s: 0.300g (MAXIMUM)
 - SPECTRAL RESPONSE, S₁: 0.150g (MAXIMUM)
 - SEISMIC DESIGN CATEGORY: B
 - STRUCTURE BASE REACTIONS ARE CALCULATED AS FOLLOWS:

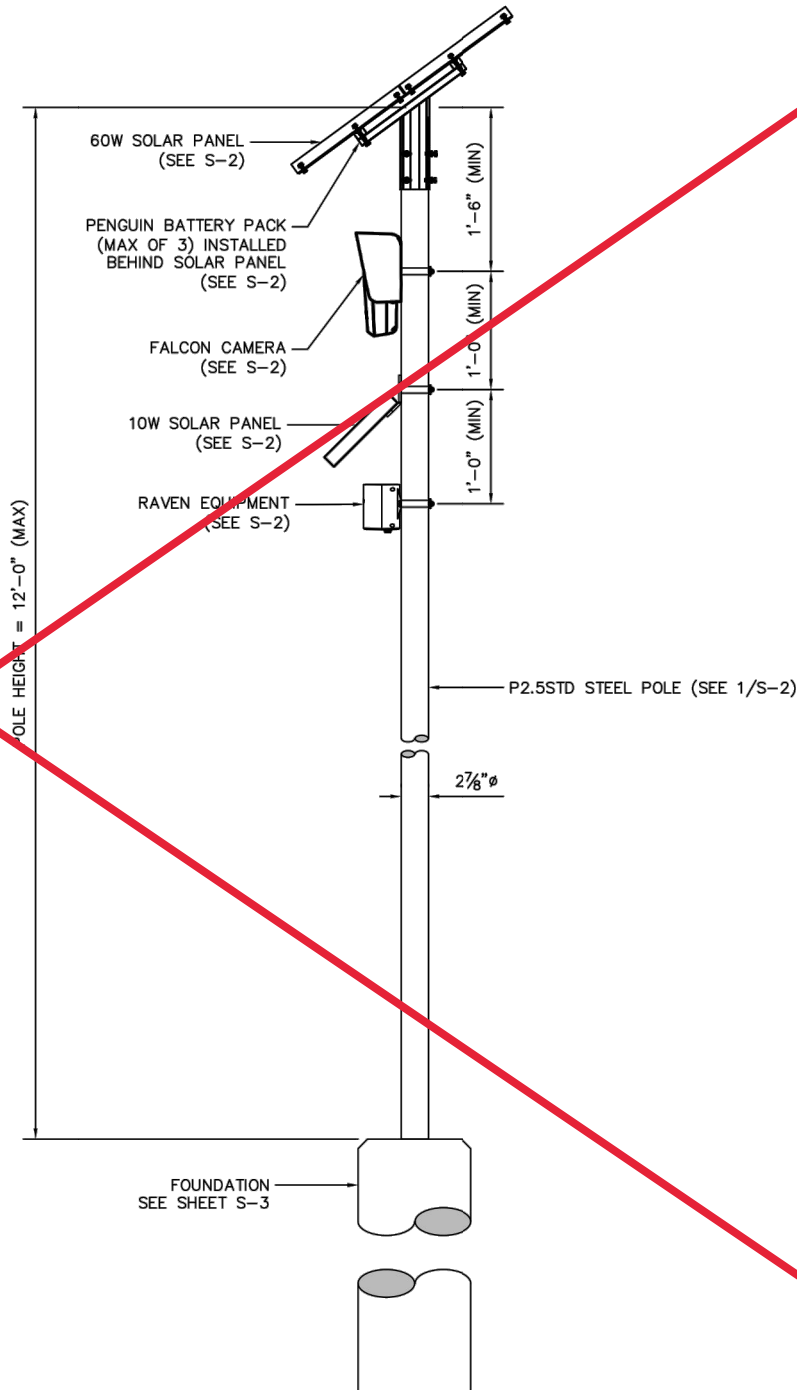
ULTIMATE BASE MOMENT:	2,700 LB-FT
ULTIMATE BASE SHEAR:	300 LB
ULTIMATE BASE AXIAL:	200 LB
 - SHOULD ANY OF THE SITE-SPECIFIC PARAMETERS BE HIGHER THAN WHAT IS NOTED ABOVE, THE EOR SHALL BE CONTACTED TO PROVIDE A REVISED DESIGN.
- THE TOP OF THE FOUNDATION OUTSIDE OF THE PIPE FOOTPRINT SHALL BE SLOPED BETWEEN 1" AND 3" TO ALLOW FOR ADEQUATE DRAINAGE.
- THE PROPOSED DETAILS OF THIS DRAWING SHALL NOT BE USED WHERE SOILS CONSIST OF SOFT CLAY, PEAT, OR SOIL WHERE A SMALL DIAMETER REBAR (#5 OR SMALLER) OR METAL PROBE PENETRATES EASILY INTO THE SOIL BY MORE THAN 6" WHEN THE FULL WEIGHT OF A PERSON IS APPLIED. IF UNEXPECTED SOIL IS FOUND ON SITE, THE CONTRACTOR SHALL CONTACT THE EOR FOR DIRECTION.

GENERAL & CONSTRUCTION NOTES

- CONTRACTOR SHALL CONTACT DESIGNATED AGENCY TO LOCATE ALL UNDERGROUND UTILITIES PRIOR TO CONSTRUCTION.
- CONTRACTOR SHALL APPLY AND OBTAIN AN APPROVED TRAFFIC CONTROL PLAN IN ACCORDANCE WITH MUTCD AND LOCAL JURISDICTION STANDARDS.
- CONTRACTOR SHALL RESTORE ALL DISTURBED AREAS TO ORIGINAL SITE CONDITION TO THE SATISFACTION OF STATE DEPARTMENT OF TRANSPORTATION AND LOCAL JURISDICTION.
- ALL WORK SHALL CONFORM TO APPLICABLE ELECTRICAL CODES EXCEPT WHEN STATE DEPARTMENT OF TRANSPORTATION OR LOCAL JURISDICTION STANDARDS SUPERSEDE.
- POLE AND PROPOSED EQUIPMENT SHALL BE CONNECTED TO SOLID BARE BOND GROUND AND GROUNDING ROD IN POLE FOUNDATION.
- ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH SPECIFICATIONS DEFINED BY THE STATE DEPARTMENT OF TRANSPORTATION OR LOCAL JURISDICTION, UNLESS SPECIFICALLY STATED OR SHOWN OTHERWISE HEREIN.

ADA COMPLIANCE NOTES

- ALL SIDEWALK CONSTRUCTION SHALL BE IN ACCORDANCE WITH ADA TITLE II, STATE DEPARTMENT OF TRANSPORTATION, AND LOCAL JURISDICTION STANDARDS.
- STATE DEPARTMENT OF TRANSPORTATION CURRENT EDITION STANDARDS SHALL BE USED FOR PEDESTRIAN CONTROL PLANS WHEN CLOSURE OF SIDEWALK IS REQUIRED FOR CONSTRUCTION.
- MINIMUM CLEAR PEDESTRIAN ACCESS ROUTE (PAR) SHALL BE 48" WIDE.
- NO OBSTRUCTION IS PERMITTED ALONG THE WIDTH OF THE SIDEWALK, UP TO AN ELEVATION OF 7'-0" ABOVE GRADE.



1 POLE ELEVATION DETAIL
S-1 SCALE: N/A

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PROJECT INFORMATION:

STANDARD
CONFIGURATION DETAILS
(DIRECT EMBED SYSTEM)
AUTOMATIC LICENSE
PLATE READER AND
SOLAR PANEL SYSTEM

PLANS PREPARED BY:

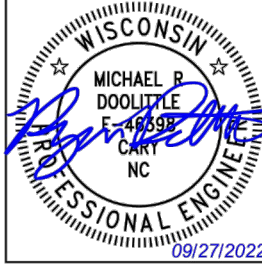
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SHEET TITLE:

GENERAL NOTES
AND POLE
ASSEMBLY DETAIL

SHEET NUMBER:

S-1

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PROJECT INFORMATION:

CUMBERLAND
POLICE DEPARTMENT
LICENSE PLATE READER
INSTALLATION

PLANS PREPARED BY:

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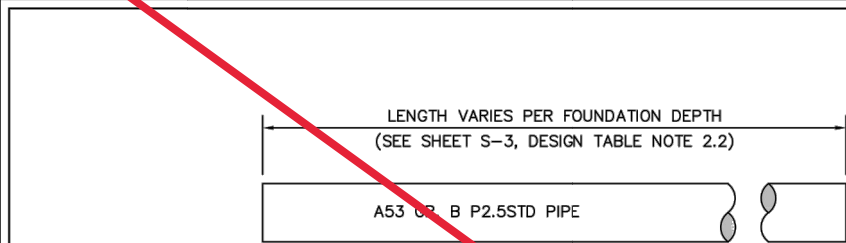
SHEET TITLE:

EQUIPMENT AND
FOUNDATION
DETAILS

SHEET NUMBER:

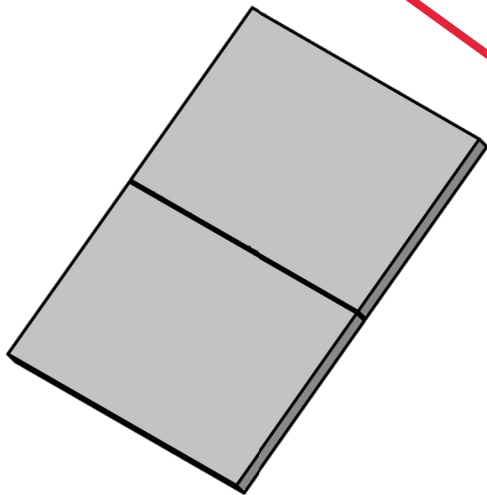
D.01

SEE AMENDED SHEETS 1-5 FOR ALUMINUM POLE DETAILS

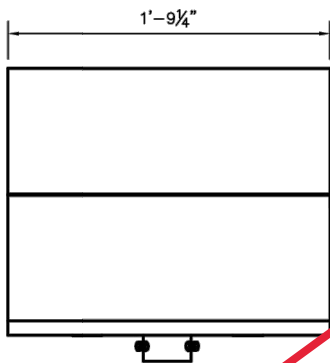


PIPE SHALL BE HOT DIP GALVANIZED

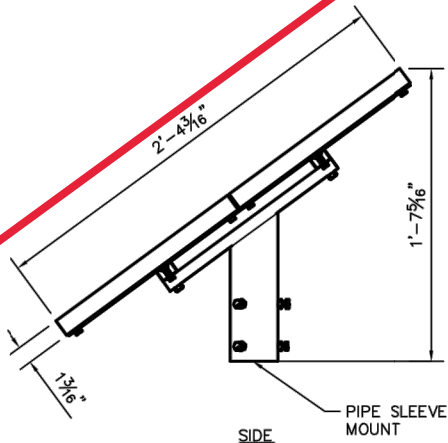
PIPE DETAIL



ISOMETRIC



FRONT

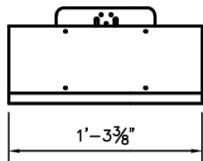


SIDE

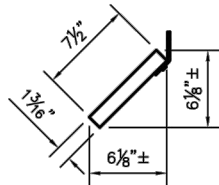
PIPE SLEEVE MOUNT

MOUNTING HARDWARE TO BE PROVIDED BY FLOCK SAFETY

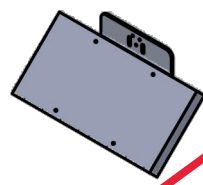
60 WATT SOLAR PANEL DETAIL (TOP MOUNTED)



FRONT



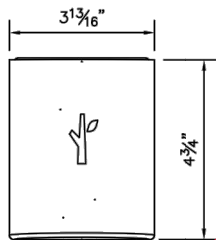
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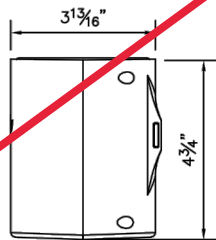
ISOMETRIC

10 WATT SOLAR PANEL DETAIL

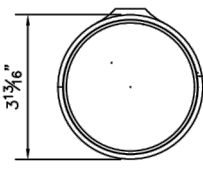
MOUNTING HARDWARE TO BE PROVIDED BY FLOCK SAFETY



FRONT



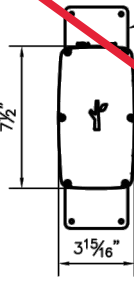
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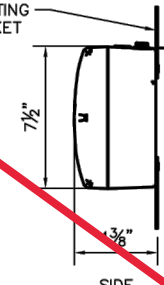
TOP

"RAVEN" EQUIPMENT

MOUNTING HARDWARE TO BE PROVIDED BY FLOCK SAFETY



FRONT



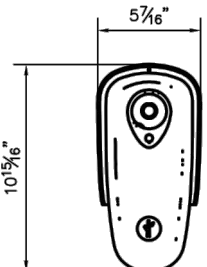
SIDE



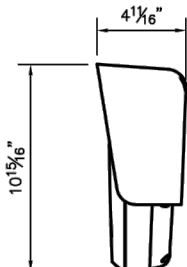
ISOMETRIC

"PENGUIN" BATTERY PACK

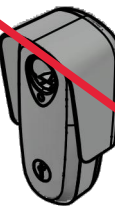
BATTERY PACKS TO BE MOUNTED BEHIND 60W SOLAR PANEL



FRONT



SIDE



ISOMETRIC

FLOCK SAFETY "FALCON" CAMERA

MOUNTING HARDWARE TO BE PROVIDED BY FLOCK SAFETY

flock safety

PROJECT INFORMATION:

STANDARD CONFIGURATION DETAILS (DIRECT EMBED SYSTEM) AUTOMATIC LICENSE PLATE READER AND SOLAR PANEL SYSTEM

PLANS PREPARED BY:

Kimley»Horn

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MRD

SHEET TITLE:

EQUIPMENT DETAILS

SHEET NUMBER:

S-2

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PROJECT INFORMATION:

CUMBERLAND POLICE DEPARTMENT
LICENSE PLATE READER
INSTALLATION

PLANS PREPARED BY:

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SHEET TITLE:

EQUIPMENT AND FOUNDATION DETAILS

SHEET NUMBER:

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SEE AMENDED SHEETS 1-5 FOR ALUMINUM POLE DETAILS

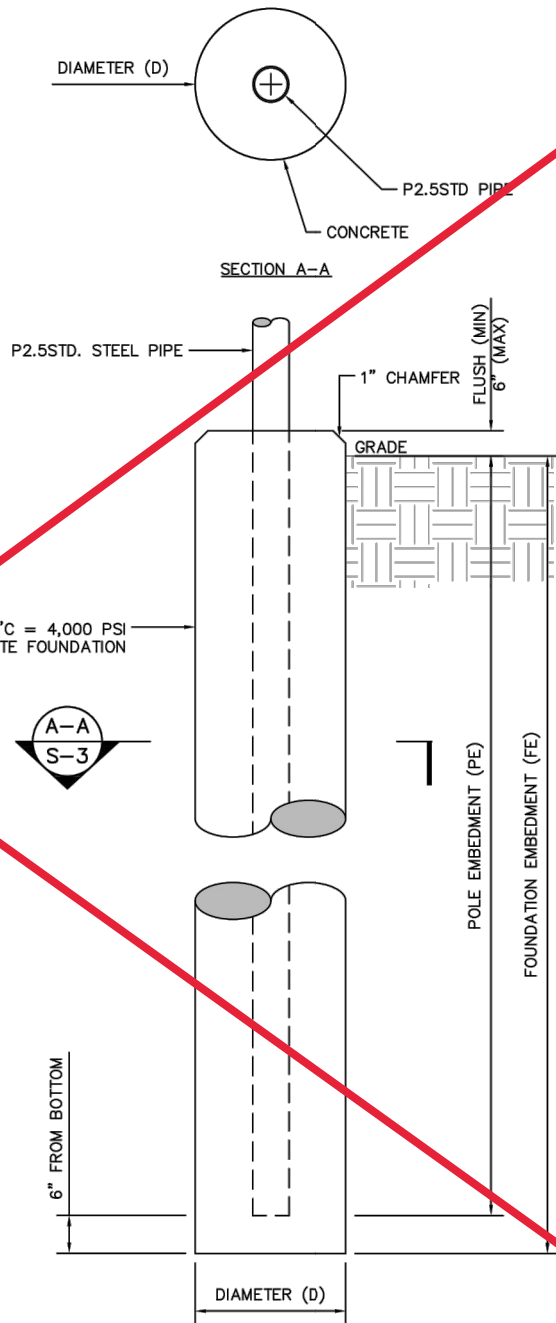
FOUNDATION DESIGN NOTES

1. FOUNDATION DESIGN RECTIONS ARE BASED ON INTERNAL CALCULATIONS BY KIMLEY-HORN. ANALYSIS CRITERIA CAN BE FOUND ON SHEET S-1.
2. FOUNDATION MAY BE CAST-IN-PLACE, OR PRECAST.
3. CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 4,000 PSI
 - 3.A. MIX DESIGN TO BE IN ACCORDANCE WITH ACI 318, CHAPTER 26
 - 3.B. COARSE AGGREGATE FOR NORMAL WEIGHT CONCRETE SHALL CONFORM TO ASTM C33 SIZE #57
 - 3.C. COLD WEATHER PLACEMENT SHALL COMPLY WITH ACI 306.1
 - 3.D. HOT WEATHER PLACEMENT SHALL COMPLY WITH ACI 305 R
4. ALL EXPOSED CONCRETE CORNERS SHALL BE CHAMFERED 1"
5. CONTRACTOR SHALL VERIFY THAT THE PROPOSED FOUNDATION CAN BE BUILT AS SHOWN. CONTRACTOR SHALL OBTAIN EOR APPROVAL FOR ANY CHANGES TO THE PROPOSED DESIGN.
6. CONTRACTOR SHALL FIELD VERIFY THE PRESENCE OF GROUNDWATER IN THE TOP 10-FT OF SOIL PRIOR TO CONSTRUCTION. IF GROUNDWATER IS ENCOUNTERED, ONE OF THE FOLLOWING METHODS SHALL BE IMPLEMENTED
 - 6.A. THE CONTRACTOR SHALL PUMP EXCESS WATER OUT OF A BORE HOLE THROUGHOUT INSTALLATION PROCESS.
 - 6.B. THE FOUNDATION MAY BE INSTALLED INSIDE INSIDE OF A SONOTUBE THAT EXTENDS TO THE FULL EMBEDMENT DEPTH. SOIL BACKFILL SHALL BE PROPERLY COMPACTED TO A MINIMUM OF 95% OF STANDARD MAXIMUM DENSITY (ASTM D 698, 100 PCF MINIMUM).
 - 6.C. A PL 1/4" TEMPORARY CASING MAY BE USED DURING INSTALLATION. THE CASING SHALL BE EXTRACTED AS THE CONCRETE IS PLACED SUCH THAT A HEAD OF CONCRETE IS MAINTAINED ABOVE THE BOTTOM OF THE CASING TO PREVENT WATER INTRUSION INTO THE CONCRETE MIX.

FOUNDATION DESIGN TABLE		
DIAMETER (D)	FOUNDATION EMBEDMENT (FE)	POLE EMBEDMENT (PE)
12"Ø	5'-0" (SEE NOTE 2)	4'-6" (SEE NOTE 2.1)

DESIGN TABLE NOTES:

1. DRAWINGS DENOTE A GENERIC FOUNDATION CONFIGURATION AND ARE NOT TO SCALE. REFER TO DIMENSIONS AND BILL OF MATERIALS FOR MATERIAL SIZES AND QUANTITIES.
2. FOUNDATION EMBEDMENT (FE) SHALL BE THE MAXIMUM OF THE DIMENSIONS SPECIFIED, OR 6" BELOW THE FROST DEPTH APPLICABLE TO THE SITE LOCATION. CONTRACTOR SHALL VERIFY FROST DEPTH PRIOR TO CONSTRUCTION. SEE SHEET R-1 FOR ADDITIONAL INFORMATION.
 - 2.1. POLE EMBEDMENT (PE) SHALL BE 6" LESS THAN THE FOUNDATION EMBEDMENT (FE) FOR ALL FINAL CONFIGURATIONS.
 - 2.2. FINAL PIPE LENGTH SHALL BE 12-FT PLUS THE REQUIRED POLE EMBEDMENT (PE) TO MEET FROST DEPTH REQUIREMENTS. FINAL PIPE SIZES MAY VARY ACCORDINGLY, FIELD CUT TO LENGTH AS REQUIRED.



1 FOUNDATION DETAIL
S-3 SCALE: N/A



PROJECT INFORMATION:

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SOLAR PANEL SYSTEM

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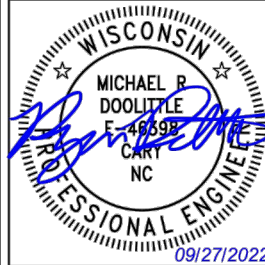


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SHEET TITLE:

FOUNDATION
DETAILS

SHEET NUMBER:

S-3



PROJECT INFORMATION:

CUMBERLAND
POLICE DEPARTMENT
LICENSE PLATE READER
INSTALLATION

PLANS PREPARED BY:



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SHEET TITLE:

EQUIPMENT AND
FOUNDATION
DETAILS

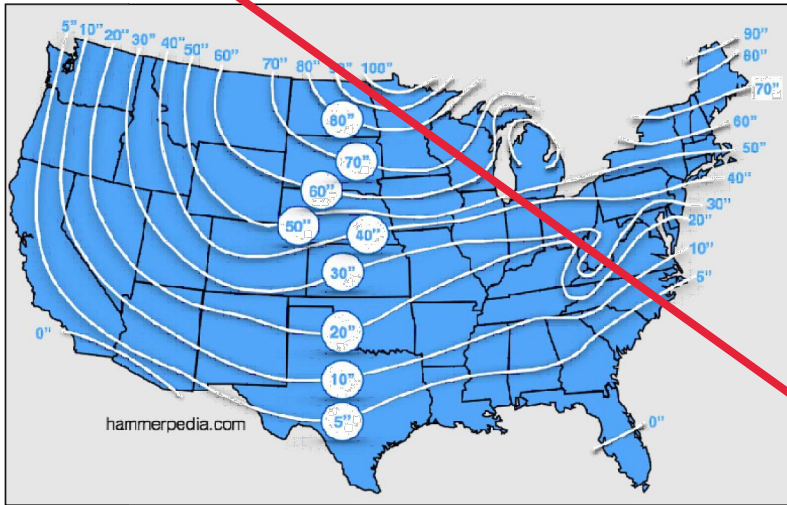
SHEET NUMBER:

D.03

SEE AMENDED SHEETS 1-5 FOR ALUMINUM POLE DETAILS

FROST DEPTH NOTES

- 1. ESTIMATED FROST DEPTHS FOR VARIOUS COUNTIES ARE LISTED IN THE PROVIDED TABLES.
- 2. CONTRACTOR IS RESPONSIBLE FOR VERIFYING FROST DEPTHS WITH THE LOCAL JURISDICTION REQUIREMENTS.



State	County	Design Frost Depth (in.)
WI	ADAMS	70
WI	ASHLAND	80
WI	BARRON	80
WI	BAYFIELD	80
WI	BROWN	60
WI	BUFFALO	80
WI	BURNETT	80
WI	CALUMET	60
WI	CHIPPEWA	80
WI	CLARK	70
WI	COLUMBIA	60
WI	CRAWFORD	70
WI	DANE	60
WI	DODGE	60
WI	DOOR	60
WI	DOUGLAS	80
WI	DUNN	80
WI	EAU CLAIRE	80
WI	FLORENCE	70
WI	FOND DU LAC	60
WI	FOREST	70
WI	GRANT	60
WI	GREEN	60
WI	GREEN LAKE	70
WI	IOWA	60
WI	IRON	80
WI	JACKSON	80
WI	JEFFERSON	60
WI	JUNEAU	70
WI	KENOSHA	60
WI	KEWAUNEE	60
WI	LA CROSSE	70
WI	LAFAYETTE	60
WI	LANGLADE	70
WI	LINCOLN	80
WI	MANITOWOC	60
WI	MARATHON	80
WI	MARINETTE	60
WI	MARQUETTE	70
WI	MENOMINEE	70
WI	MILWAUKEE	60
WI	MONROE	70
WI	OCONTO	60
WI	ONEIDA	80
WI	OUTAGAMIE	70
WI	OZAUKEE	60
WI	PEPIN	80
WI	PIERCE	80
WI	POLK	80

State	County	Design Frost Depth (in.)
WI	PORTAGE	70
WI	PRICE	80
WI	RACINE	60
WI	RICHLAND	70
WI	ROCK	60
WI	RUSK	80
WI	SAINT CROIX	80
WI	SAUK	70
WI	SAWYER	80
WI	SHAWANO	70
WI	SHEBOYGAN	60
WI	TAYLOR	80
WI	TREMPEALEAU	80
WI	VERNON	70
WI	VILAS	80
WI	WALWORTH	60
WI	WASHBURN	80
WI	WASHINGTON	60
WI	WAUKESHA	60
WI	WAUPACA	70
WI	WAUSHARA	70
WI	WINNEBAGO	70
WI	WOOD	70



PROJECT INFORMATION:

STANDARD
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AUTOMATIC LICENSE
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SOLAR PANEL SYSTEM

PLANS PREPARED BY:

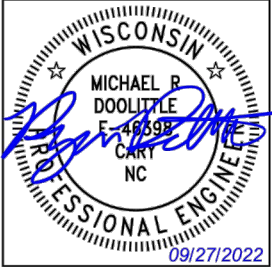


817 WEST PEACHTREE STREET,
NW, SUITE 601,
ATLANTA, GA 30308
PHONE: (404) 419-8700
WWW.KIMLEY-HORN.COM

REV: DATE: ISSUED FOR: BY:

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0	09/27/22	CONSTRUCTION	MRD

LICENSER:



KHA PROJECT NUMBER:

014681000

DRAWN BY: CHECKED BY:

GJV

MRD

SHEET TITLE:

FROST DEPTH
REQUIREMENTS

SHEET NUMBER:

R-1

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PROJECT INFORMATION:

CUMBERLAND
POLICE DEPARTMENT
LICENSE PLATE READER
INSTALLATION

PLANS PREPARED BY:



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KHA PROJECT NUMBER:

014681000.1.109

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RCG

TLL

SHEET TITLE:

EQUIPMENT AND
FOUNDATION
DETAILS

SHEET NUMBER:

D.04

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TCP DESIGNED PER WISDOT FIELD MANUAL LAYOUT 6



flock safety™

PROJECT INFORMATION:

CUMBERLAND
POLICE DEPARTMENT
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TRAFFIC CONTROL PLANS

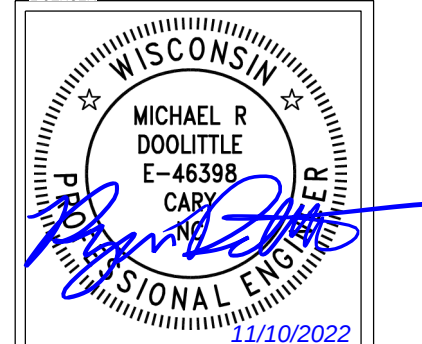
PLANS PREPARED BY:

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KHA PROJECT NUMBER

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WRB

SHEET TITLE:

TRAFFIC CONTROL PLAN

SHEET NUMBER: 7

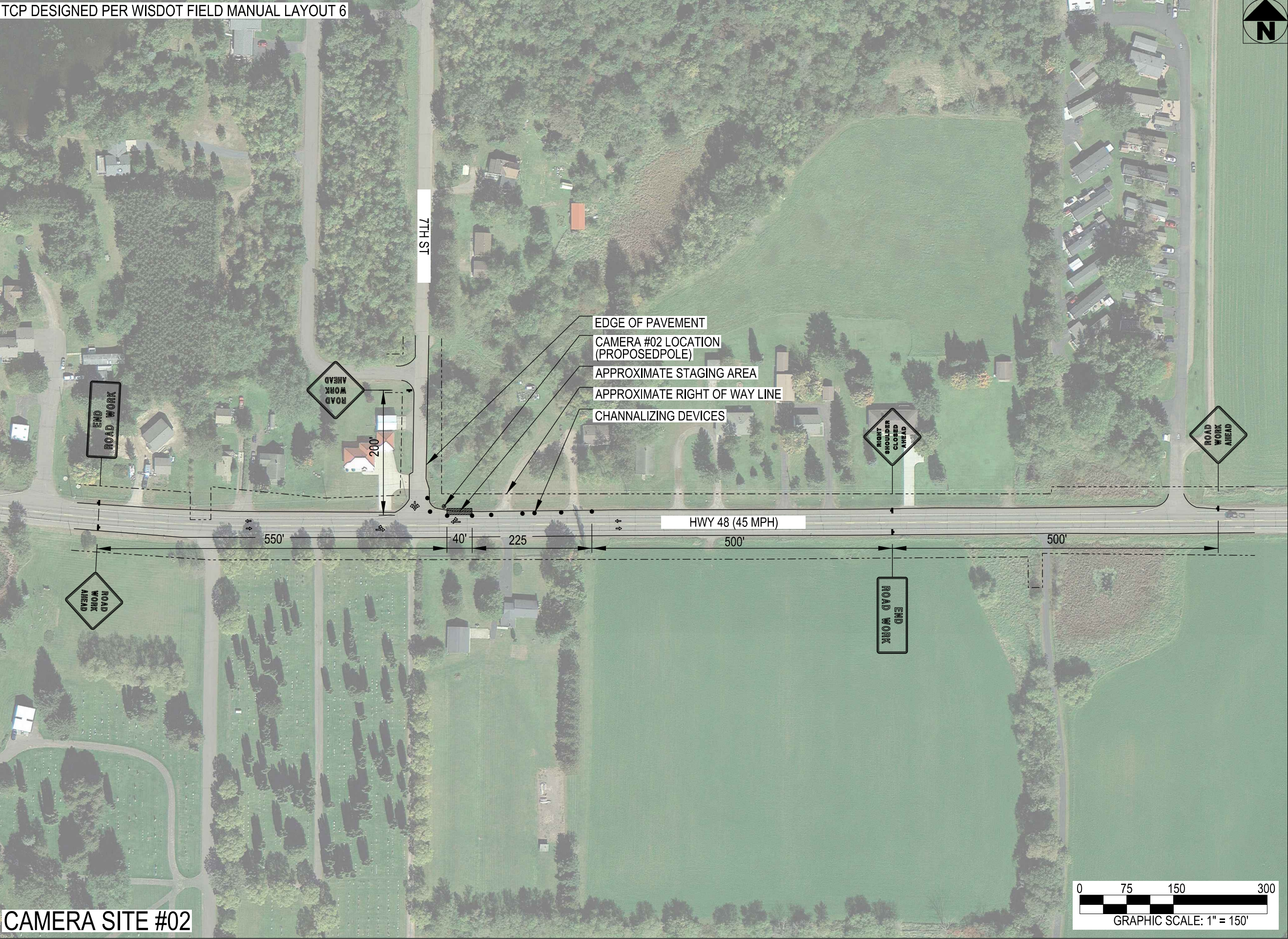
TC.01



CAMERA SITE #01

0 75 150 300
GRAPHIC SCALE: 1" = 150'

TCP DESIGNED PER WISDOT FIELD MANUAL LAYOUT 6



CAMERA SITE #02

Block safety

PROJECT INFORMATION:

CUMBERLAND
POLICE DEPARTMENT
LICENCE PLATE READER
TRAFFIC CONTROL PLANS

PLANS PREPARED BY:

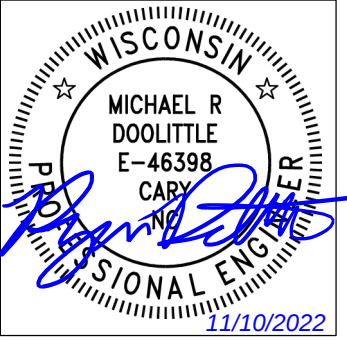
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KHA PROJECT NUMBER:

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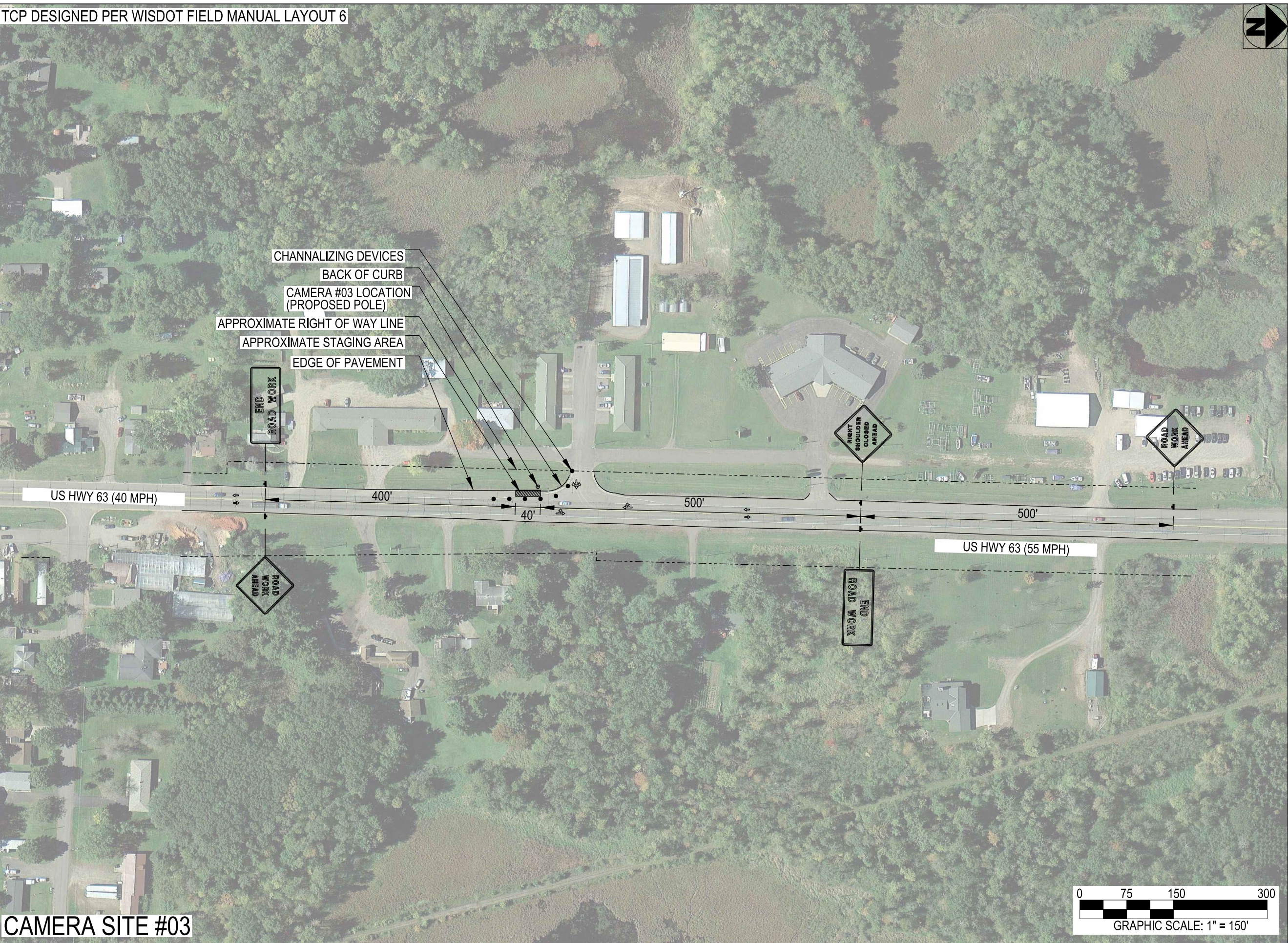
SHEET TITLE:

TRAFFIC CONTROL
PLAN

SHEET NUMBER:

TC.02

TCP DESIGNED PER WISDOT FIELD MANUAL LAYOUT 6



CAMERA SITE #03

flock safety

PROJECT INFORMATION:

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POLICE DEPARTMENT
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TRAFFIC CONTROL PLANS

PLANS PREPARED BY:

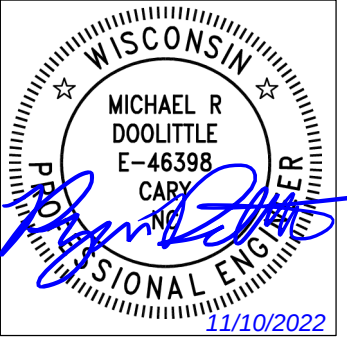
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LICENSER



KHA PROJECT NUMBER:

014681000.1.109

DRAWN BY: CHECKED BY:

WRB

SHEET TITLE:

TRAFFIC CONTROL
PLAN

SHEET NUMBER:

TC.03



Cumberland Police Department

Heather Wolfe, Chief of Police

950 1st Avenue
Cumberland, WI 54829
E-mail: chief@cupd.org

TEL: (715) 822-2754
FAX: (715) 822-8604

Letter of Authorization

Flock Safety and Ashley Laydon from CHC are authorized to sign the permit application and associated documents on behalf of Cumberland Police Department.

Sincerely,

A handwritten signature in black ink, appearing to be "H Wolfe", written over a light blue horizontal line.

Heather Wolfe, Chief of Police

Universal Structural Analysis Report for

flock safety™

12.0-ft Aluminum Pole Structure
With Direct-Embed Foundation
State of Wisconsin

March 31, 2023

Kimley-Horn Project #: 014681002.1.100

Kimley-Horn Jira Ticket: [KHFS-919](#)

Analysis Results

Structure Usage	100%	SUFFICIENT
Foundation Usage	71%	SUFFICIENT

Prepared in accordance with 2015 AASHTO LRFDLTS-1 and 2015 IBC

NOTE: The specified risk category and associated wind speed requires that the structure be located a minimum of 12-ft (the pole height) from the travel way. Refer to site-specific construction drawings for structure location and distances.

Prepared & Signed by:

Ryan Doolittle, PE

Lic. #46398, Exp. 07/31/2024

Kimley-Horn and Associates Inc., COA #2474-011

Revision History:

0 – Initial Release

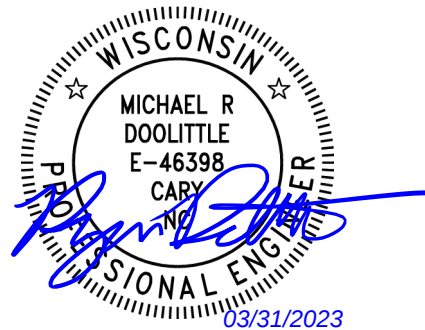


TABLE OF CONTENTS

Supporting Documentation3

Analysis Criteria3

Appurtenance Listing3

Results4

Conclusions and Recommendations4

Assumptions and Limitations5

Appendix6

SUPPORTING DOCUMENTATION

Information on the current tower geometry, member sizes, foundation dimensions, soil properties, and antenna loading was obtained from the sources listed in the table below. It is assumed that all information provided to Kimley-Horn & Associates, Inc. is accurate. In the absence of information to the contrary, we assume the structure has been properly erected and maintained per the original design drawings and the capacity has not significantly changed from the “as new” condition.

Structure Drawings	Kimley-Horn Pole Configuration Drawings, dated 03/30/2023 (KHFS-919)
Foundation Drawings	
Geotechnical Data	Not Provided – Presumptive soils considered for analysis and design ¹

1 – Presumptive soils per referenced IBC, Section 1806.

ANALYSIS CRITERIA

Code	2015 AASHTO LRFDLTS-1 / 2015 IBC / ASCE 7
Basic Wind Speed	105 mph (3-Second Gust, V_{ult})
Risk Category	Low / ADT > 10,000 (300-Year MRI)
Exposure Category	C
Topographic Factor	$K_{zt} = 1.0$

1 – The specified risk category and associated wind speed requires that the structure be located a minimum of 12-ft (the pole height) from the travel way. Refer to corresponding site-specific construction drawings for structure location and distances.

APPURTENANCE LISTING

The tables below will detail proposed equipment considered in this analysis. If the final equipment in the field deviates from the information shown below, Kimley-Horn & Associates, Inc. should be contacted to perform an analysis revision immediately.

Proposed Equipment:

Equipment Elev ¹ (ft)	Description [H x W x D]	Mount Type ²	Mount Elev (ft)	Owner
12.0	(1) 60W Solar Panel [21.0" x 28.0" x 4.1"] (Max of 3) Penguin Battery Packs ³ [7.5" x 3.9" x 4.4"]	Kicker Mount Kit	12.0	Flock Safety
10.5	(1) Falcon Camera [10.9" x 5.4" x 4.7"]	Strapping	10.5	
9.5 ⁴	(1) 10W Solar Panel [7.5" x 15.4" x 1.5"]	Strapping	9.5	
8.5 ⁴	(1) Raven Equipment [4.8" x 3.8"Ø]	Strapping	8.5	

1 – Equipment elevations denote maximum value. Equipment may be lower based on site-specific requirements.

2 – All mounting hardware to be provided by Flock Safety for construction.

3 – Penguin battery packs to be mounted behind 60W solar panel and are not exposed to wind loading.

4 – Marked equipment is optional and is not required to be installed based on site-specific requirements.

RESULTS

The tables below show a maximum usage summary for each group of components in the structure. The usage of a component is the ratio of force in the member compared to its calculated capacity. A more detailed report of member usages can be found in the appendix at the end of this report. Usages greater than 100% indicate where the force in the member exceeds its capacity.

Structure Usages:

Component	Controlling Usage	Result
Pole Structure	100%	SUFFICIENT
Foundation	71%	SUFFICIENT

CONCLUSIONS AND RECOMMENDATIONS

Per our Universal Structural Analysis Report, the structure has been found to be **SUFFICIENT**. The superstructure and foundation **can** support the referenced loading in accordance with the structural strength requirements of 2015 AASHTO LRFDLTS-1 and 2015 IBC.

Refer to referenced construction drawings for full structure configuration and foundation specifications.

ASSUMPTIONS AND LIMITATIONS

This report is not a condition assessment of the tower and foundation; It is an engineering analysis based upon the theoretical capacity of the structure. Unless told otherwise, we assume the structure and foundation to be in “like new” condition. It is the responsibility of our client and the structure owner to verify that the structure modeled and loading considered is accurate. If these assumptions are not accurate, Kimley-Horn & Associates, Inc. should be notified immediately to perform a revised analysis. This analysis assumes all antenna mounts are adequate to support the existing and proposed loads. It is the carrier's responsibility to ensure equipment mounts are adequate to support the proposed loading and were not analyzed as part of this report.

All services are performed, results obtained, and recommendation made in accordance with generally accepted engineering principles and practices. Kimley-Horn & Associates, Inc. is not responsible for the conclusions, opinions and recommendations made by others based on the information in this report.

Kimley-Horn makes no warranties, expressed or implied in connection with this report and disclaims any liability arising from original design, material, fabrication, and section deficiencies or corrosion of the tower.

APPENDIX

2015 IBC / ASCE 7 / AASHTO LRFD LTS-1

Figure 3.8-3
(300-yr MRF)
(Minimum)

Section 3.8.4
 Section 3.8.4
 Table C3.8.4.1
 Table 3.8.5-1 (Round)
 Section C3.8.2.1
 (Included in wind speed)
 Section 3.8.6

 ASCE 7, Figure 22-1
 ASCE 7, Figure 22-2
 ASCE 7, Figure 22-14
 ASCE 7, Section 11.4.5
 ASCE 7, Section 11.4.5
 ASCE 7, Table 1.5-2

[illegible][illegible]

	F_{ij} (lbs)	M_{ij} (lb-ft)	Weight (lbs)	M_w (lb-ft)
	80.7	484.2	24.0	0.0
TOTAL	80.7	484.2	24.0	0.0

Kimley»Horn

ASCE 7, Table 12.2-1 (G.2)
ASCE 7, Table 12.8-2
ASCE 7, Table 12.8-2

ASCE 7, Equation 12.8-7
ASCE 7, Equation 12.8-3,4
ASCE 7, Equation 12.8-5
ASCE 7, Equation 12.8-2
ASCE 7, Section 11.4.5
ASCE 7, Equation 12.8-1
ASCE 7, Section 12.8.3

[illegible]

	1.2D + 1.0E	
TOTAL MOMENT	0.067	kip-ft
TOTAL SHEAR	0.008	kip
TOTAL AXIAL	0.107	kip

Input

- Member Forces:

$M_u := 2.320\text{-kip}\cdot\text{ft}$ = factored flexural reaction at base of pole
 $P_u := 0.110\text{-kip}$ = factored axial reaction at base of pole
 $V_u := 0.240\text{-kip}$ = factored shear reaction at base of pole
 Cantilever := "Y" = Cantilevered pole? (Y/N)

► Moments C_b (Between Brace Points)

- Shaft Properties:

$L_w := 12.0\text{-ft}$ = pole length
 Sides := 0 = number of sides of shaft (0 for round)
 $D_o := 2.875\text{-in}$ = diameter of shaft at grade
 $t := 0.203\text{-in}$ = thickness of shaft at base



- Aluminum Properties (Table 6.4.1-1) - **A6063-T6**

F_{uAl} := 30-ksi = ultimate tensile strength
 F_{yAl} := 25-ksi = tensile yield strength
 $E := 10100\text{-ksi}$ = Modulus of Elasticity
 F_{uAl} := 25-ksi = compressive yield strength
 F_{uAl} := 19-ksi = shear ultimate strength
 $F_{sy} := 0.6\cdot F_{ty} = 15\text{-ksi}$

- Phi Factors (Table 6.5.1-1)

$\phi_{ty} := 0.90$ = phi factor, tension yielding
 $\phi_{tr} := 0.75$ = phi factor, tension rupture

- Phi Factors (Table 6.5.1-2)

$\phi_{by} := 0.90$ = phi factor, flexural tensile yielding
 $\phi_{br} := 0.75$ = phi factor, flexural tensile rupture

OUTPUT (Design Constants):

$$C_b := \begin{cases} 2.1 & \text{if Cantilever} = "Y" \\ \frac{12.5\cdot M_u}{2.5\cdot M_u + 3\cdot M_A + 4\cdot M_B + 3\cdot M_C} & \text{otherwise} \end{cases} = \text{bending coefficient } C_b \text{ (6.8.2)} \quad C_b = 2.1$$

$$D_i := D_o - 2\cdot t = 2.469\text{-in} \\ = \text{inside diameter}$$

$$R_o := \frac{D_o}{2} = 1.438\text{-in} \quad R_i := \frac{D_i}{2} = 1.234\text{-in} \quad R_b := R_o - 0.5\cdot t = 1.336\text{-in} \\ = \text{outside radius} \quad = \text{inside radius} \quad = \text{mid-thickness radius}$$

$$A_s := \begin{cases} \pi\cdot(R_o^2 - R_i^2) & \text{if Sides} = 0 = 1.704\text{-in}^2 \\ D_o^2 - D_i^2 & \text{if Sides} = 4 \\ \text{"Define"} & \text{otherwise} \end{cases} = \text{cross section area}$$

$$I := \begin{cases} \frac{\pi}{4}\cdot(R_o^4 - R_i^4) & \text{if Sides} = 0 = 1.53\text{-in}^4 \\ \frac{D_o^4 - D_i^4}{12} & \text{if Sides} = 4 \\ \text{"Define"} & \text{otherwise} \end{cases} = \text{moment area of inertia}$$

$$r := \sqrt{\frac{I}{A}} = 0.947\text{-in} = \text{radius of gyration}$$

$$S_x := \begin{cases} \frac{\pi}{4}\cdot\frac{(R_o^4 - R_i^4)}{R_o} & \text{if Sides} = 0 = 1.064\text{-in}^3 \\ \frac{D_o^4 - D_i^4}{6\cdot D_o} & \text{if Sides} = 4 \\ \text{"Define"} & \text{otherwise} \end{cases} = \text{section modulus}$$

$$J_w := \begin{cases} \frac{\pi}{2}\cdot(R_o^4 - R_i^4) & \text{if Sides} = 0 = 3.059\text{-in}^4 \\ \frac{2\cdot t^2\cdot(D_o - t)^4}{2\cdot D_o\cdot t + 2\cdot t^2} & \text{if Sides} = 4 \\ \text{"Define"} & \text{otherwise} \end{cases} = \text{torsional constant}$$

$$k_t := 1.0 = \text{tension coefficient (Table 6.6.2-1)}$$

OUTPUT (Buckling Constants - Table 6.5.2-2):

$\kappa := 1.0 \cdot \text{ksi} \quad = \text{Table 6.5.1-2, note a}$

$$B_c := F_{cy} \cdot \left[1 + \left(\frac{F_{cy}}{2250 \cdot \kappa} \right)^{0.50} \right] = 27.635 \cdot \text{ksi}$$
$$D_c := \frac{B_c}{10} \cdot \left(\frac{B_c}{E} \right)^{0.50} = 0.145 \cdot \text{ksi}$$
$$C_c := 0.41 \cdot \frac{B_c}{D_c} = 78.381$$
$$B_p := F_{cy} \cdot \left[1 + \left(\frac{F_{cy}}{1500 \cdot \kappa} \right)^{0.3333} \right] = 31.387 \cdot \text{ksi}$$
$$D_p := \frac{B_p}{10} \cdot \left(\frac{B_p}{E} \right)^{0.50} = 0.175 \cdot \text{ksi}$$
$$C_p := 0.41 \cdot \frac{B_p}{D_p} = 73.548$$
$$B_t := F_{cy} \cdot \left[1 + \left(\frac{F_{cy}}{50000 \cdot \kappa} \right)^{0.20} \right] = 30.467 \cdot \text{ksi}$$
$$D_t := \frac{B_t}{4.5} \cdot \left(\frac{B_t}{E} \right)^{0.3333} = 0.978 \cdot \text{ksi}$$
$$C_t := \text{"Define"}$$
$$B_{br} := 1.3 \cdot F_{cy} \cdot \left[1 + \left(\frac{F_{cy}}{340 \cdot \kappa} \right)^{0.3333} \right] = 46.117 \cdot \text{ksi}$$
$$D_{br} := \frac{B_{br}}{20} \cdot \left(\frac{6 \cdot B_{br}}{E} \right)^{0.50} = 0.382 \cdot \text{ksi}$$
$$C_{br} := \frac{2 \cdot B_{br}}{3 \cdot D_{br}} = 80.555$$
$$B_{tb} := 1.5 \cdot F_{cy} \cdot \left[1 + \left(\frac{F_{cy}}{50000 \cdot \kappa} \right)^{0.20} \right] = 45.7 \cdot \text{ksi}$$
$$D_{tb} := \frac{B_{tb}}{2.7} \cdot \left(\frac{B_{tb}}{E} \right)^{0.3333} = 2.8 \cdot \text{ksi}$$
$$C_{tb} := \left(\frac{B_{tb} - B_t}{D_{tb} - D_t} \right)^2 = 69.934$$
$$B_s := F_{sy} \cdot \left[1 + \left(\frac{F_{sy}}{800 \cdot \kappa} \right)^{0.3333} \right] = 18.985 \cdot \text{ksi}$$
$$D_s := \frac{B_s}{10} \cdot \left(\frac{B_s}{E} \right)^{0.50} = 0.082 \cdot \text{ksi}$$
$$C_s := 0.41 \cdot \frac{B_s}{D_s} = 94.566$$



☒ AASHTO LRFDLT-1, Section 6.8.3.2 (Pipes and Round Tubes)

Eq 6.5.1-35 (Flexure Local Buckling)

$\phi_b := 0.9$

$\lambda := \frac{R_b}{t} = 6.581$

$$\lambda_1 := \left(\frac{B_{tb} - B_t}{D_{tb} - D_t} \right)^2 = 69.934$$
$$\lambda_2 := C_t = 500$$

$$F_{b_2a} := \begin{cases} (B_{tb} - D_{tb} \sqrt{\lambda}) & \text{if } \lambda \leq \lambda_1 \\ \frac{\pi^2 \cdot E}{16 \cdot \lambda \cdot \left(1 + \frac{\sqrt{\lambda}}{35} \right)^2} & \text{if } \lambda \geq \lambda_2 \\ (B_t - D_t \sqrt{\lambda}) & \text{otherwise} \end{cases}$$

$F_{b_2a} = 38.5 \cdot \text{ksi}$

$\phi F_{b_2a} := \phi_b \cdot F_{b_2a}$

$\phi F_{b_2a} = 34.665 \cdot \text{ksi}$

Eq 6.5.1-20 (Flexural Compression)

$\phi_{bv} := 0.9$

$F_{b_2b} := 1.17 \cdot F_{cy}$

$F_{b_2b} = 29.2 \cdot \text{ksi}$

$\phi F_{b_2b} := \phi_b \cdot F_{b_2b}$

$\phi F_{b_2b} = 26.3 \cdot \text{ksi}$

Eq 6.5.1-7 (Flexural Tension - Yielding)

$\phi_t := 0.9$

$F_{t_2c} := 1.17 \cdot F_{ty}$

$F_{t_2c} = 29.2 \cdot \text{ksi}$

$\phi F_{t_2c} := \phi_t \cdot F_{t_2c}$

$\phi F_{t_2c} = 26.3 \cdot \text{ksi}$

Eq 6.5.1-8 (Flexural Tension - Rupture)

$\phi_{tr} := 0.75$

$F_{t_2d} := \frac{1.24 \cdot F_{tu}}{k_t}$

$F_{t_2d} = 37.2 \cdot \text{ksi}$

$\phi F_{t_2d} := \phi_{tr} \cdot F_{t_2d}$

$\phi F_{t_2d} = 27.9 \cdot \text{ksi}$

OUTPUT - RESULTS

$\sigma_{bc} := \frac{M_u}{S} + \frac{P_u}{A} = 26.2 \cdot \text{ksi} \quad = \text{factored compressive stress}$

$\sigma_{bt} := \frac{M_u}{S} - \frac{P_u}{A} = 26.1 \cdot \text{ksi} \quad = \text{factored tensile stress}$

$$\text{ratio} := \begin{pmatrix} \frac{\sigma_{bc}}{\phi F_{b_2a}} \\ \frac{\sigma_{bc}}{\phi F_{b_2b}} \\ \frac{\sigma_{bt}}{\phi F_{t_2c}} \\ \frac{\sigma_{bt}}{\phi F_{t_2d}} \end{pmatrix}$$

$$\text{ratio} = \begin{pmatrix} 76 \\ 100 \\ 99 \\ 94 \end{pmatrix} \cdot \%$$

$\text{ratio}_{\max} := \max(\text{ratio})$

$\text{ratio}_{\max} = 100 \cdot \%$

☒ AASHTO LRFDLT-1, Section 6.8.3.2 (Pipes and Round Tubes)

☒ AASHTO LRFDLT-1, Section 6.8.3.3 (Other Closed Shapes)

☒ AASHTO LRFDLT-1, Section 6.8.3.3 (References)

Project Title: 12' Aluminum Direct Embed (WI)
Project Notes: KHFS-919

Calculation Method: Full 8CD

***** I N P U T D A T A

Pier Properties

Diameter	Distance of Top of Pier above Ground	Concrete Strength	Steel Yield Strength
(ft)	(ft)	(ksi)	(ksi)
-----	-----	-----	-----
1.00	0.50		

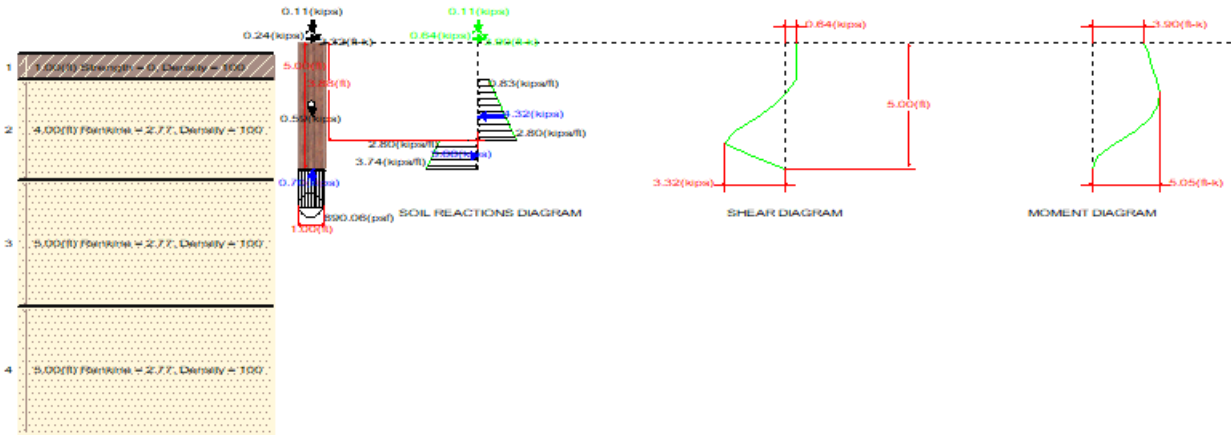
Soil Properties

Layer	Type	Thickness	Depth at Top of Layer	Density	CU	KP	PHI
		(ft)	(ft)	(lbs/ft^3)	(psf)		(deg)
-----	-----	-----	-----	-----	-----	-----	-----
1	Clay	1.00	0.00	100.0			
2	Sand	4.00	1.00	100.0		2.770	28.00
3	Sand	5.00	5.00	100.0		2.770	28.00
4	Sand	5.00	10.00	100.0		2.770	28.00

Design (Factored) Loads at Top of Pier

Moment	Axial Load	Shear Load	Additional Safety Factor Against Soil Failure
(ft-k)	(kips)	(kips)	
-----	-----	-----	-----
2.3	0.1	0.24	1.33

***** R E S U L T S



Calculated Pier Properties

Length	Weight	Pressure Due To Axial Load	Pressure Due To Weight	Total End-Bearing Pressure
(ft)	(kips)	(psf)	(psf)	(psf)
-----	-----	-----	-----	-----
5.000	0.589	140.1	750.0	890.1

Ultimate Resisting Forces Along Pier

Type	Distance of Top of Layer to Top of Pier	Thickness	Density	CU	KP	Force	Arm
	(ft)	(ft)	(lbs/ft^3)	(psf)		(kips)	(ft)
-----	-----	-----	-----	-----	-----	-----	-----
Clay	0.50	1.00	100.0			0.00	1.00
Sand	1.50	2.38	100.0		2.770	4.32	2.90
Sand	3.88	1.12	100.0		2.770	-3.68	4.46

Shear and Moments Along Pier

Distance below Top of Pier	Shear (with Safety Factor)	Moment (with Safety Factor)	Shear (without Safety Factor)	Moment (without Safety Factor)
(ft)	(kips)	(ft-k)	(kips)	(ft-k)
-----	-----	-----	-----	-----
0.00	0.6	3.9	0.5	2.9
0.50	0.6	4.2	0.5	3.2
1.00	0.6	4.5	0.5	3.4
1.50	0.6	4.9	0.5	3.7
2.00	0.1	5.1	0.1	3.8
2.50	-0.6	4.9	-0.5	3.7
3.00	-1.5	4.4	-1.2	3.3
3.50	-2.7	3.4	-2.0	2.5
4.00	-3.3	1.7	-2.5	1.3
4.50	-1.8	0.5	-1.3	0.3
5.00	0.0	-0.0	0.0	-0.0

Embedded Pole Foundation

Customer:	Flock Safety
Structure ID:	12-ft Aluminum Pole (WI)
JIRA #:	KHFS-919
TIA-222 Revision:	H
Tower Type:	Monopole

Applied Loads		
	Comp.	Uplift
Moment (kip-ft)	2.32	
Axial Force (kips)	0.11	
Shear Force (kips)	0.24	

Material Properties		
Concrete Strength, f'c:	4	ksi

Pier Design Data		
Depth	5	ft
Ext. Above Grade	0.25	ft
Pier Section 1		
From 0.25' above grade to 5' below grade		
Pier Diameter	1	ft

[Rebar & Pier Options](#)

[Embedded Pole Inputs](#)

[Belled Pier Inputs](#)

Analysis Results		
Soil Lateral Check		
	Compression	Uplift
D _{v=0} (ft from TOC)	1.86	-
Soil Safety Factor	2.74	-
Max Moment (kip-ft)	2.70	-
Rating	48.5%	-
Soil Vertical Check		
	Compression	Uplift
Skin Friction (kips)	1.19	-
End Bearing (kips)	1.18	-
Weight of Concrete (kips)	0.74	-
Total Capacity (kips)	2.37	-
Axial (kips)	0.85	-
Rating	35.9%	-
Embedded Pole Interaction		
	Compression	Uplift
Critical Depth (ft from TOC)	1.86	-
Critical Moment (kip-ft)	2.70	-
Critical Moment Capacity	3.81	-
Rating	71.3%	-

Structural Foundation Rating	71.3%
Soil Interaction Rating	48.5%

Check Limitation	
Apply TIA-222-H Section 15.5:	☐
N/A	☐
Additional Longitudinal Rebar	
Input Effective Depths (else Actual):	☒
Shear Design Options	
N/A	☐
N/A	☐
N/A	☐

[Go to Soil Calculations](#)

Soil Profile														
Groundwater Depth		N/A		# of Layers		2								
Layer	Top (ft)	Bottom (ft)	Thickness (ft)	γ _{soil} (pcf)	γ _{concrete} (pcf)	Cohesion (ksf)	Angle of Friction (degrees)	Calculated Ultimate Skin Friction Comp (ksf)	Calculated Ultimate Skin Friction Uplift (ksf)	Ultimate Skin Friction Comp Override (ksf)	Ultimate Skin Friction Uplift Override (ksf)	Ult. Gross Bearing Capacity (ksf)	SPT Blow Count	Soil Type
1	0	1	1	100	150			0.000	0.000	0.00	0.00			Cohesionless
2	1	5	4	100	150		28	0.127	0.127			2	5	Cohesionless

Table 3.8-1—Mean Recurrence Interval

Traffic Volume	Risk Category		
	Typical	High	Low
ADT $\leq$ 100	300	1700	300
100<ADT $\leq$ 1000	700	1700	300
1000<ADT $\leq$ 10000	700	1700	300
ADT>10000	1700	1700	300
Typical: Failure could cross travelway			
High: Support failure could stop a lifeline travelway			
Low: Support failure could not cross travelway			
Roadside sign supports: use 10-yr MRI, see Figure 3.8-4.			

NOTE: "Low" Risk Category requires that the structure be located a minimum of 12-ft (the pole height) from the travel way. Refer to corresponding construction drawings for structure location and distances.

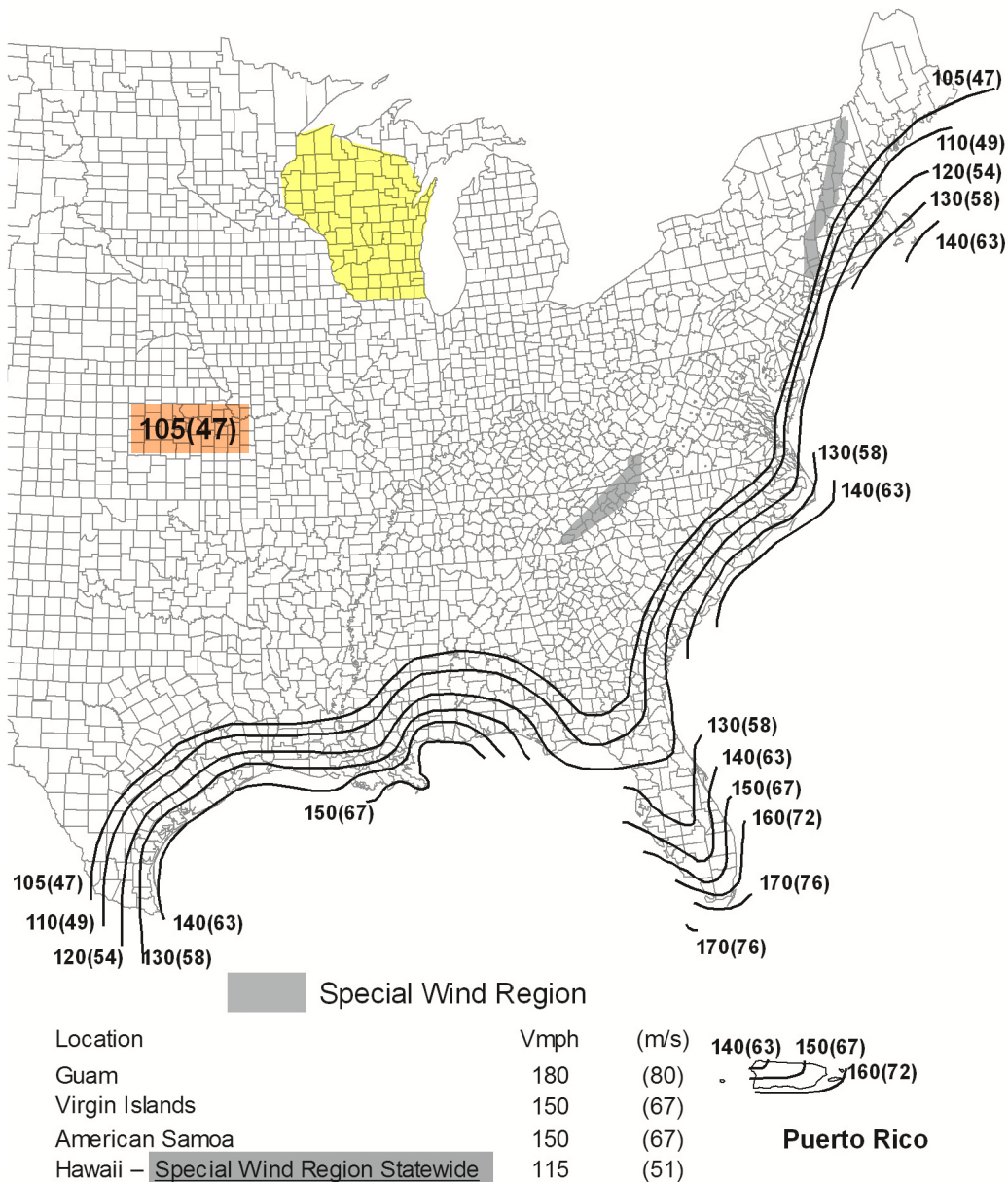


Figure 3.8-3b—300-Year MRI Basic Wind Speed, mph (m/s)—Eastern U.S. and Islands (used with permission from ASCE)

Notes:

1. Values are nominal design 3-s gust wind speeds in mph (m/s) at 33 ft above ground for Exposure C category,
2. Linear interpolation between wind contours is permitted.
3. Islands and coastal areas outside the last contour shall use the last wind speed contour of the coastal area.
4. Mountainous terrain, gorges, ocean promontories, and special wind regions shall be examined for unusual wind conditions.
5. Wind speeds correspond to approximately a 15 percent probability of exceedance in 50 yrs (Annual Exceedance Probability = 0.00333, MRI = 300 Yrs)